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THE PSYCHOLOGICAL DIMENSIONS OF WORK, AN EXPERIMENTAL
TAXONOMY OF OCCUPATIONS.
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AN ATTEMPT WAS MADE TO DEVELOP A TAXONOMY OF OCCUPATIONS FOR VOCATIONAL COUNSELORS. A REVIEW WAS MADE OF THE PROFESSIONAL RESEARCH LITERATURE RELATING TO OCCUPATIONAL AND PSYCHOLOGICAL VARIABLES POTENTIALLY USEFUL TO A TAXONOMY. EFFORTS WERE MADE TO RECONCILE THE FINDINGS WITH DATA OBTAINED PREVIOUSLY THROUGH THE JOB ANALYSIS AND INTEREST MEASUREMENT (JAIM) INVENTORY. BASED ON LOGICAL AND STATISTICAL ANALYSIS OF THE DATA, AN EXPERIMENTAL TAXONOMY WAS CONSTRUCTED WHICH INCLUDED THREE MAJOR ELEMENTS - BEHAVIORAL STYLES, WORK PREFERENCES, AND VALUES. THE TAXONOMY WAS APPLIED EXPERIMENTALLY TO SAMPLES OF POLICEMEN, SOCIAL WORKERS, AND JUVENILE COURT JUDGES. IN GENERAL, PREDICTIONS MADE REGARDING BEHAVIORAL STYLES, WORK PREFERENCES, AND VALUES WERE CONFIRMED. THE INVESTIGATOR RECOMMENDS FURTHER RESEARCH AND DEVELOPMENT, AND FURTHER DESIGN AND CONDUCT OF EXPERIMENTS TO TEST THE CONSTRUCT VALIDITY OF THE VARIOUS SCALES OF THE JAIM. HE ALSO SUGGESTS THAT SOME IMPORTANT VARIABLES MAY NOT BE MEASURED BY THE JAIM. (JC)

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THE PSYCHOLOGICAL DIMENSIONS OF WORK

An Experimental Taxonomy of Occupations

BY REGIS H. WALTHER

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THE GEORGE WASHINGTON UNIVERSITY
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THE PSYCHOLOGICAL DIMENSIONS OF WORK

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AN EXPERIMENTAL TAXONOMY OF OCCUPATIONS

By

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December, 1964

The Center for the Behavioral Sciences
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ADDENDA

1. Page 8--Paragraph 2, Line 1, and Paragraph 3, Line 2--change "factual" to "factorial."
2. Page 15--Paragraph 1, Line 1 -- add "to performance," at line's end.
3. Page 15--Paragraph 1, Line 5 -- change "correlated" to "conducted."
4. Page 54--Paragraph 2, Line 13 -- change "rise" to "use."
5. Page 63--Paragraph 4, Line 3--change "personality measurement scale lie in the middle" to "scale often correlate negatively with the criterion."

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CHAPTER I

INTRODUCTION

One of the most crucial decisions that an individual makes is his choice of an occupation. There is increasing realization that a person's occupation is an important influence on his total life adjustment and that it influences almost every aspect of his life. It determines where he will live, where his children will go to school; it also affects his choice of friends. In a real sense, choosing an occupation is the equivalent to choosing a way of life.

Occupational decisions also determine how a society will utilize its manpower. When people and jobs are poorly matched, both the individual and society pay the price of wasted human resources and its resulting personal frustration. Emotional problems frequently stem from job tensions and frustrations, while absorbing and rewarding work can be highly therapeutic. The following statement by an experienced psychiatrist, quoted by Hoppock (1957), is relevant to this point:

> One's job must furnish an outlet suitable to one's particular personal needs. The greatest part of one's emotional life is lived in one's job, not elsewhere, as is commonly supposed. Different professions and vocations . . . offer quite different emotional outlets; even specialties within a profession offer different outlets. One may be more than adequately equipped intellectually, and with special ability for a given profession, but if the profession does not offer the emotional outlets peculiar to one's own needs, unhappiness and discontent may follow. Even though material and professional success may come, it is likely to be as dust in the mouth. After considerable trial and error, other partial outlets are found that make the situation bearable, but there is likely to be an element of frustration throughout that makes for unhappiness.

Despite the importance of making a wise occupational decision, it is becoming increasingly difficult for the individual to obtain the information which will enable him to relate job requirements to his abilities and preferences. The increasing rate of technological change in industrial society results in frequent and important changes in job content. The job title frequently gives little, and sometimes misleading, information about job requirements or satisfaction potentials. Better methods are needed for analyzing both the job and the individual to improve the match between individuals and jobs.

The analysis of the job and individual should be focused on those stable differences among individuals, functioning in psychologically equivalent job situations, which are related to differences in job performance or satisfaction. It is not enough to describe differences among individuals and differences in job content. It is essential that consideration be given to the interaction between the personal and situational variables. We need to know which specific personal characteristics lead to effective performance or to satisfaction in which specific jobs. Samler (1961), in a critique of occupational information as related to the psycho-social aspects of work, states the issue as follows:

> The problem is to identify as best we can with available techniques, and better as new theory evolves and more sensitive instruments are developed, those psychological and sociological aspects of occupations that may make the difference for the particular individual between sound choice and poor choice, between the ability to meet the expectations the individual establishes in accordance with his identity and their frustration, between the exercise of attitudes and values to the advantage of the worker and his unhappiness in functioning in a situation and in a way contrary to his basic behavior choices, between patterns of interaction with others that are rewarding and those that annoy or frustrate him; totally the problem is one of meeting his personality needs or of thwarting them.

Basic to the in situ analysis of workers functioning in jobs is the identification and suitable measurement of job differences. Research literature in this area is accumulating, but it is richer in promising hypotheses than in tested concepts or longitudinal, cross-validated studies. Anastasi (1964) summarizes the current status of the research:

> At best, what occupational differences have been found in personality patterns represent group trends. For many kinds of work, one could probably write personality sketches that would roughly fit a majority of persons in that occupation. This sort of information is useful in counseling insofar as it gives the counselee some idea of the kind of person with whom he is most likely to associate if he chooses a given type of work. But, within any occupational group, the range of individual differences is fully as wide in personality variables as it is in aptitudes. Nor are these differences necessarily associated with different degrees of success. The breadth and flexibility of most occupations are such that different persons may succeed in them for different reasons. Individuals may choose specialties (as in medicine or law) that are consonant with their own needs, interests, and values. Even a single job can often be structured by the individual to fit his own aptitude and personality pattern. Moreover, the same job in different companies or under different supervisors may call for very different personality traits. Specific jobs as well as occupational fields undoubtedly vary in the degree of specialization and restructuring that they permit....

Although the longitudinal studies are limited in number, there have been some. For example, Terman (1954) reported on the follow-up of California children with initial Stanford-Binet IQ's of 140 or higher in which a comparison was made between men who eventually became physical scientists with those specializing in social sciences, law, or the humanities; and he found significant differences on a number of variables such as early evidence of ability or interest in science by the scientific group and higher score on social adjustment for the non-scientific group.

Kelly and Goldberg (1959) conducted a follow-up study on clinical psychologists and found that no measure used in the original study (Kelly and Fiske, 1951) predicted performance ten years later. They did find, however, that some of the measures distinguished among sub-fields of specialty. Therapists were high on altruism, and low on social conventionality, exploitativeness, vocational indecision, and scientific interests. Those who went into teaching and research were high on childhood rebelliousness, intraphysic conflict, curiosity, scientific interests, and creativity.

Job performance and satisfaction must be analyzed separately because these variables are not necessarily related (Kahn, 1960). A person can do well at something, at least for a time, and not particularly enjoy it. Over the long run, the lack of satisfaction may influence his performance, but also it may not. It is also true that people sometimes enjoy doing things even though they cannot do them very well. For these reasons, it is essential that both performance and satisfaction be used as criteria for studying individual differences.

The concern in this paper, then, focuses on three variables: relatively stable individual differences, their association with differential levels of performance, and satisfaction in various situations. The paper will begin by describing results obtained from tests of ability, interests, and personality which have proved to have some degree of success in predicting job satisfaction, or performance, or in distinguishing among occupations. Next, it will review the laboratory-type experiments and other studies which attempt to relate personality variables to different types of task performances ranging from simple tasks to complex job situations. Third, it will attempt to integrate the factor analyses of the ability, interests, and personality tests which have been shown to have substantial empirical validation. Also it will describe recently-proposed models for classifying occupations. Finally, it will attempt to interpret the results of these investigations, develop a psychologically meaningful taxonomy of occupations, and apply this taxonomy experimentally to several occupational groups. A major goal throughout this paper is the integration of the research using the author's instrument, the Job Analysis and Interest Measurement (Walther, 1964), with other work relating personality to performance.

CHAPTER II

TESTS OF ABILITY, INTEREST, AND PERSONALITY

Cronbach (1960) places tests into two classes: tests of maximum performance and tests of typical performance. Tests of maximum performance (tests of ability) are used when we want to know how well the person can perform at his best. Tests of typical performance (tests of personality, habits, interests, and character) seek to determine what the person is likely to do in a given situation or in a broad class of situations. Another way of describing this difference is that tests of maximum performance show what a person can do over a short period of time when he is maximally motivated. Tests of typical performance show what a person is likely to do over a larger period of time under varying degrees of motivation. The following sections will describe results obtained from tests of both types which have proved to have some degree of success in predicting job satisfaction or performance or in distinguishing among occupations.

Tests of Mental Ability

Tests of ability can be divided into tests of general mental ability and tests of special mental abilities.

A. Tests of General Mental Ability

Cronbach (1960) states that the outstanding success of scientific measurement of individual differences in behavior has been the general mental test. Despite the overenthusiasm and occasional errors that have attended its development, some people feel that the general mental test stands today as the most important single contribution of psychology to the practical guidance of human affairs. The most influential work in this field was done by Alfred Binet, a French physician who, in studies published between 1893 and 1911, tried to find out just how "bright" and "dull" children differed. Paris school officials were concerned about their many non-learners and decided to remove the hopelessly feeble-minded to schools where they could be taught a simplified curriculum. The test he developed has had a profound effect on subsequent tests. In 1916, Lewis M. Terman extended the application of Binet's method to normal and superior children and produced the Stanford Revision of the Binet Scale. This was followed by the development of numerous general ability scales; some individually administered and some administered in groups; some making their discriminations on the basis of difficulty of items (power tests) and some making their discriminations on the basis of number of items completed (speed tests).

Tests of general ability have been used successfully to predict educational achievement and to estimate the highest educational level the individual is likely to reach. They have also been used successfully to predict performance in occupational training, although the correlations with industrial training criteria are somewhat lower than those with academic criteria. In the extensive survey by Ghiselli (1955), the validity coefficient with industrial criteria averaged about .35, which contrasted with the correlations of .50 or .60 commonly found with academic achievement. Persons engaged in different occupations have been found to differ significantly in mean general ability test scores (Stewart, 1947). The professions and other occupations calling for a high level of education typically show a higher average and a narrower range of general ability test scores than do routine clerical and manual occupations. Ghiselli (1955) reviewed the entire literature on the prediction of success of workers and found that general ability tests predict both training and performance criteria for many jobs. The coefficients for any job title range from very high to negligible, depending on the range of abilities in the group tested and the demands of the specific job. Average validities for group mental tests against proficiency criteria fall in the following ranges:

.00 to .19	Sales, service occupations, packers and wrappers
.20 to .34	Supervisors, clerks, assemblers
.35 to .47	Electrical workers, managerial and professional

Somewhat similar results are reported by the United States Employment Service (General Aptitude Test Battery, 1962). With respect to this type of test, Anastasi's (1964) conclusions are these:

> When intelligence tests are correlated with criteria of job proficiency among employed personnel, the correlations vary widely with the nature of the job. In jobs requiring a high degree of the abstract verbal and numerical aptitudes covered by these tests, the correlation is likely to be high. In other jobs, however, the correlation may be low or negligible, once the required minimum is exceeded. Thus in certain jobs the relation between job proficiency and intelligence may be non-linear. This might be the case, for instance, when job success depends chiefly upon traits not measured by intelligence tests, such as mechanical aptitude, artistic sensitivity, manual skills, or personality factors. Even in such jobs, of course, persons falling below a certain minimum in academic intelligence would fail.

Anastasi's conclusion--that for many jobs the correlation between general mental ability and job proficiency is negligible, after the required minimum has been met--is supported by studies of two populations in the upper ranges of mental ability. Walther (1959) found no relationship between scores on the General Ability sub-test of the Foreign Service Officer Examination and rate of promotion. MacKinnon (1962), reporting on studies of creativity, states that no relation was found between intelligence tests and measures of creativity after a certain minimum level of intelligence had been met.

B. Tests of Special Abilities

Intelligence is usually associated with verbal, memory, numerical, and thinking abilities. Since intelligence tests are heavily weighted with verbal abilities, it has been questioned whether intelligence should be considered as a unitary trait or as a mixture of a number of primary abilities. Considerable research has been done on this question. Burt (1958) summarizes the current view:

> In nearly every factual study of cognitive ability, the general factor commonly accounts for quite 50 per cent of the variance (rather more in the case of the young child, rather less with the older age groups) while each of the minor factors accounts for 10 per cent or less.

The need to identify all significant mental-ability factors led to the construction of multiple-aptitude batteries through factual research. Rather than yielding a single global score, such as an IQ, these batteries provide a profile of scores on separate tests, most of which correspond more or less closely to the traits identified through factor analysis. Three important multiple aptitude batteries are the Differential Aptitude Tests (DAT), Flanagan Aptitude Classification Tests (FACT), and the General Aptitude Test Battery (GATB).

Thorndike and Hagen (1959) found that occupational categories could be differentiated in terms of level and pattern of aptitude-test scores. The test scores, however, did not prove to have any validity in predicting degree of job success within any one occupation. This, plus other data, suggests that tests of special ability are useful for establishing minimal levels of various kinds of ability; but that, as in the case of a test of general mental ability, they are not particularly useful for predicting how well the individual will perform in the job after the minimum requirements are met. Such tests are likely to be more useful for indicating the possibility of failure than for the possibility of success. The U.S. Employment Service follows this principle by using ability-test scores to establish cut-off points for an occupation on each of the relevant ability tests. All those who score above the cut-off point pass, and all those who score below fail.

Tests of Interests

An interest can be defined as an attitude favorably disposing one toward some object, situation, or idea. Extensive research has shown that one of the best single indicators of satisfaction in certain occupations is the way in which the interests of candidates compare with those of people who are successful in these occupations.

An early instrument which has stood the test of time unusually well is the Strong Vocational Interest Blank (SVIB). Initially developed in 1928, it has been subjected to long-term longitudinal validation. Preliminary research demonstrated that persons engaged in a given occupation tend to have common interests, not only in job activities, but also in school subjects, hobbies, sports, types of plays or books, social relations, and the like. It thus proved feasible to question the individual about his interests in familiar things and thereby determine the degree to which his interests resemble those of persons successfully engaged in various occupations. One follow-up study (Strong, 1955) reported that, for a group who took the SVIB while college students, the chances were 3.5 to 1 that a man who was given an "A" rating for a particular occupation would be employed in that specific occupation 18 years later. On the other hand, with a "C" rating the chances were 5 to 1 that he would not be so employed.

Another widely-used interest inventory is the Kuder Preference Record, which has two forms (Vocational and Occupational). The Vocational form, which is the most commonly used, reports interest scores in terms of broad areas such as mechanical, scientific, persuasive, and artistic, while the Occupational form reports scores for specific occupations.

A consistent research finding has been that the patterns of likes and dislikes which characterize a person in a given occupational group remain constant over the years. The correlations between test and retest scores after an interval of several years are consistently high (Strong, 1951). The pattern of interests seems to be a rather permanent characteristic of the person, and it appears that a person's interest pattern develops before he selects an occupation. This of course, is not true of all people--some persons show radical change in their interests, even though the interests of people on the average remain relatively constant.

The positive relationship between interests and job satisfaction has been adequately established. It is not nearly as clear what relationship there is between interests and job performance once the individual has selected the occupation. Strong (1934) and Bills (1941) found that there was a positive correlation between scores on the Life Insurance Key of the SVIB and success as an insurance salesman. Other efforts to relate interest scores to performance have, however, for the most part, proved to be disappointing. Frederiksen and Gilbert (1960) showed that factors additional to interests influence performance. They replicated a study which had found that interests predicted engineering grades for non-compulsive, but not for compulsive, subjects. They concluded that non-compulsive students would expend effort in relation to degree of interest but that compulsive students would expend the effort regardless of interest.

Personality Inventories

The self-report type of personality test originated in the attempt to identity emotional maladjustment and neurotic behavior. A number of personality inventories, especially those designed for use in clinical contexts, still focus primarily on emotional abnormality. Most of the newer inventories, however, are concerned with individual differences in emotional, motivational, and social traits among essentially normal persons.

Types of Instruments

There are three different ways in which personality inventories have been developed: factor analysis, empirical keying, and theoretical assumptions. Several examples of each type are briefly described in the following section.

A. Based on Factor-Analysis

Two major inventories based on factor analysis are the 16 P.F. Questionnaire developed by Cattell and his associates, which has 16 scales, and the Guilford-Zimmerman Temperament Survey, which has 10 scales.

B. Based on Empirical Keying

The Minnesota Multiphasic Personality Inventory (MMPI) was developed empirically in the late 1930's and early 1940's to afford an objective assessment of some of the major personality characteristics related to psychiatric disability. It started with nine clinical categories and now has as many as 32 scales. The California Psychological Inventory (CPI) has been called the "sane man's MMPI":

> It is concerned with characteristics of personality which have a wide and pervasive applicability to human behavior, and which in addition are related to the favorable and positive aspects of personality rather than to the morbid and pathological.

Most of the 18 CPI scales have been derived empirically as measures of such characteristics as poise, socialization, achievement potential, and personal orientation.

C. Based on Theoretical Assumptions

The Allport-Vernon Study of values is based on theory and attempts to assess the relative strength of six basic interests: motives, or evaluative attitudes, designated as theoretical; economic; aesthetic; social; political; and religious. The Edwards Personal Preference Schedule (EPPS) is based on the personality theory of Murray (1938) and was designed to measure the relative strength of 15 needs such as achievement, deference, order, etc.

D. Combination of Theoretical and Empirical Considerations

The Job Analysis and Interest Measurement was developed on the basis of both empirical and theoretical considerations. Items were initially selected on the basis of their ability to distinguish between occupations and between high and low performers within an occupation. Hypotheses were then developed to explain the empirical results and new items were prepared on the basis of these hypotheses and tested against occupational criteria. The JAIM provides measures for 37 variables relating to orientations, work-content preferences, interpersonal behavior, formal organizational behavior, information-analysis behavior, and success criteria.

Evaluation of Personality Inventories

Over the years, intellectual and aptitude components of job performance have been identified and measured with considerably greater success than non-cognitive segments of such performance. It has become clear that ability is a necessary, but not a sufficient, condition for actual performance, and that non-aptitude variables must be investigated to account for the presently unexplained variance in job performance.

Research in this area is made difficult by the multidimensionality of job sucess, the great diversity within presumably homogeneous jobs, the change in relevance of criterion components from one job setting to another, and the situational variables which must be taken into account in conducting criterion research.

The greatest success with predicting performance criterion has been with empirically-keyed biographic inventories. The difficulty with these results is that because they are not tied to theory and specific hypotheses, it is difficult to generalize from one situation to another.

Personality inventories have been used extensively, but unfortunately the same limitations apply to the results as were discussed in the earlier quote from Anastasi on occupational personality patterns. A review of the literature provides no solid base for optimism concerning research progress in this field. The many inventories developed have not, in fact, been validated. Of the 10 major personality and interest inventories, [1] only one, the SVIB for life-insurance salesmen (supra), has been used successfully twice by different investigators to predict the same occupational criterion. Because the SVIB was developed empirically and is not based on theory, it is difficult as in the case of biographic inventories to interpret these results.

The Job Analysis and Interest Measurement has been used to distinguish between superior and weak performers as secretaries and Foreign Service Officers (Walther, 1964). The Authority Identification scales had the highest correlation with performance of secretaries. Superior secretaries also tended to score high on the Optimism and Social Leadership scales and above a certain minimal level on Resourceful Accomplishment. Superior Foreign Service Officers were high on the Academic Data, Resourceful

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[1] Minnesota Multiphasic Personality Inventory, 16 P.F. Questionnaire, Guilford-Zimmerman Temperament Survey, Thurstone Temperament Survey, Bernreuter Personality Inventory, California Psychological Inventory, Study of Values, Gordon Personal Profile and Personal Inventory, Strong Vocational Interest Blank, and Kuder Preference Record(Vocational).

Accomplishment, Problem Analysis, Optimism, Self-Confidence, Formal Status, Self-Assertive-Aggressive, Activity-Frequent Change, Empirical-Intuitive, Persuasive Leadership, and Autonomous scales. They were low on the Approval from Others, Social Service, Hierarchical, and Systematic-Methodical scales. Other studies showed that scores on the Social Service and Approval from Others scales correlated positively with performance ratings of personnel officers and negatively with ratings of political and economic reporting officers in U.S. Department of State. The Authority Identification scale correlated positively with performance ratings of secretaries but had no relationship with the ratings of code clerks.

In several studies of Sears executives, Bentz (1961) reports that superior executives were high on the following Guilford-Martin scales: Sociability, Optimism, Dominance, Self-Confidence, Composure, Objectiveness, and Tolerance. They were also high on the Allport-Vernon Political scale and the Kuder Persuasive scale, and low on the Kuder Artistic scale. In a single study, Norman (1960), using the Guilford-Zimmerman Temperament Survey, found that successful supervisors scored high on Self-Confidence, Dominance, Sociability, and General Activity. Miner (1962) studied sales performance of service station managers and found that superior managers were dependent on others, liked to be with people, and were self-confident. The poor managers were low in aggression, distant from people, had strong super-egos, and tended either to overconform or be deviants.

In summary, there is substantial evidence that personality factors significantly influence performance, but only limited evidence that the relevant variables have been identified and can be reliably measured using existing personality and interest inventories.

CHAPTER III

PERSONALITY VARIABLES AND PERFORMANCE

The extent and variety of studies relating personality variables is impressive, but it is difficult to relate them to each other. Different lines of investigation have proceeded independently; and while the results seem similar, one cannot be sure because the necessary integrating experiments have not been correlated. In this section, a review will be made of the major theoretical concepts which have been useful for stimulating research to appraise the current status of the research and the apparent interrelationships of the various lines of inquiry.

Extroversion-Introversion, Deferred Gratification, Neuroticism, and Anxiety

Four concepts which appear to be interrelated and therefore will be discussed together are extroversion-introversion, deferred gratification, neuroticism, and anxiety.

Extrovert-Introvert

One of the most widely-used psychological typologies, developed by Carl Jung, refers to individuals as extroverts or introverts. The extrovert is guided by the impressions the external world leaves upon him. All interests, values, and attitudes are directed toward his physical and social environment. The introvert, on the contrary, is much involved with his inner world and is guided by inner, subjective factors. Thus the introvert is inwardly reflective and has a tendency to withdraw from situations. The extrovert on the other hand reacts positively to things. He is outwardly expressive, tending to be talkative and active in making social contacts.

These ideas have received such wide circulation that the words "introversion" and "extroversion" have become incorporated into the everyday vocabulary. A number of personality inventories have attempted to measure the underlying trait. The Bernreuter Personality Inventory includes in its four scales one called Introversion. Flanagan (1935), however, intercorrelated the scales and found that the Introversion and Neurotic Tendency scales correlated .87 and that therefore it was unreasonable to assume that they were measuring separate variables. Guilford has used the concepts, but item correlation led him to suggest that introversion could be separated into social introversion (S), thinking introversion (T), depression (D), cycloid tendencies--frequent shifts of mood (C), and restraint (R). The Myers-Briggs Type Indicator is based on Jung's theory, and the Maudsley Personality Inventory (MPI) was based on factor analyses which showed introversion-extroversion to be one of the stable and interpretable factors.

Despite the extensive discussion of this trait, there is comparatively little research data which establishes construct validity. MacKinnon (1962) used the Myers-Briggs Type Indicator and found that two-thirds of his "creative" group of college students scored as introverts, though there is no evidence that introverts as such are more creative than extroverts. Eysenck and his collaborators (Lynn and Gordon, 1961) have found that the extrovert does not do as well in academic work and other tasks requiring sustained concentration. They attribute this to his tending to fatigue and to give up more quickly. Bendig (1960) also came to the same conclusion that extroversion is significantly and negatively related to academic achievement. Eysenck (1953) reports that, on level of aspiration experiments, subjects high at the extroversion end of the scale tend to overestimate their performance and are little bothered by failure, while subjects falling at the introversion end of the scale tend to underestimate their performance and are preoccupied with their failures. He also found (Eysenck, 1959) that extroverts show greater decrements on an intelligence test by taking longer to obtain correct solutions toward the end of the test as compared to introverts, and by giving up more easily toward the end.

Neuroticism

Neuroticism is another term which has become a household word which cannot be defined as precisely as is desirable. It is traditionally applied to a class of behaviors that have been described as deviating from conventional ways of responding, for example, hysterical, obsessive-compulsive, and phobic reactions. The Bernreuter Personality Inventory, Minnesota Multiphasic Inventory, Guilford-Zimmerman Temperament Survey, the Maudsley Personality Inventory among others include scales related to neurotic tendencies.

There are conflicting reports on the relation between neuroticism and academic achievement. Lynn (1961) reports a positive correlation and explains it on the basis that neuroticism is related to autonomic arousal which results in a capacity for sustained work and this contributes to educational attainment. Their data also shows a positive correlation between neuroticism and size of vocabulary, and a curvilinear relationship between neuroticism and score on Raven's Progressive Matrix Test (a non-verbal test of reasoning ability) with subjects in the middle range doing the best. Bendig (1960) studied an American class and found no correlation between neuroticism and academic achievement. This contradiction might be resolved by considering Lynn and Gordon's (1961) finding that the relationship between neuroticism and certain types of performance is curvilinear and that the optimum level of neuroticism for academic performance appears to be about one-half a standard deviation above the national average. Perhaps the groups studied in the conflicting experiments were substantially different on the neuroticism variable.

Anxiety

Another commonly-used term which is difficult to define is anxiety. People experience anxiety as a distressful feeling. It can be distinguished from fear in that it is not prompted by apparent realistic dangers. One way of measuring anxiety is through self-report rating scales like the Taylor Manifest Anxiety Scale, Welch's A-Scale, and Sarason's Test Anxiety Scale. Scales measuring anxiety do not necessarily correlate very highly with each other; this fact suggests that anxiety may not be a unitary concept.

The relationship between anxiety and performance is by no means a simple one. It is necessary to take into account how anxious a person is, the complexity of the task he is trying to perform, whether he is attempting to learn something new or is carrying out a well-practiced routine, and the specific anxiety measures being used, before we can predict how his performance will be affected by his anxiety level. Since the appearance of the Taylor Manifest Anxiety Scale (1953), numerous studies have been conducted to determine the relationship of anxiety to conditioning and complex learning. Such studies, conducted under controlled laboratory conditions, showed that the performance of subjects with high anxiety was superior to that of low anxiety subjects in simple conditioning (Taylor, 1951; Spence and Farber, 1953); but in performing complex tasks, subjects with low anxiety scores are consistently superior (Taylor and Spence, 1952; Montague. 1953).

The possibility that anxiety might have either a facilitating or debilitating effect on academic performance was tested by Alpert and Haber (1960). They constructed an Academic Achievement Test consisting of two independent scales: a Facilitating Scale based on a prototype of the item "Anxiety helps me to do better during examinations and tests," and a Debilitating Scale based on the prototype of the item "Anxiety interferes with my performance during examinations and tests." They found that the Facilitating Scale did in fact correlate positively with academic performance and that the Debilitating Scale correlated negatively.

Deferred Gratification and Impulse Control

London and Rosenham (1964) point out that, since Dewey and Freud, impulse control or delay of gratification has been thought to be important for the socialized self; and the absence of impulse control has been advanced as an explanation of psychopathology, delinquency, and other social deviances. Singer (1961) found that children who are relatively inclined to fantasize and daydream are more likely than others to be able to comply when instructed to sit still and do nothing for long periods of time, possibly because they daydream to pass the time. Siegman (1961) found that delinquents had less future time perspective than did non-delinquents; i.e., they were less able to imagine a distant future event. Time perspectives also correlated with motor impulsiveness, as predicted, supporting the view that delinquents are less capable of patient and foresightful delay than are non-delinquents. It appears also that ability to delay is positively related to need for achievement and negatively related to acquiescence (Mischel, 1961). In another study (Straus, 1962), it was found that a score on a deferred-gratification questionnaire was positively correlated with both academic achievement and occupational aspirations, when intelligence and social-economic status scores were held constant.

Discussion

Neuroticism and introversion-extroversion are two of the four personality dimensions proposed by Eysenck (1953).[2] Eysenck (1960) believes that individual differences in autonomic reactivity and conditionability give rise to these two dimensions of personality. The more autonomically reactive, the more prone will the individual be to neurotic disorders. The more easily he forms conditioned responses, the more introverted will his behavior be. Combine introversion and neuroticism and you get the dysthymic individual who seems almost predestined to suffer from anxieties, conditioned fears and phobias, compulsions and obsessions, reactive depressions and so forth. Strong autonomic drive reactions (neuroticism) combined with low capacity to form quick and strong conditioned responses (extroversion) is likely to show the symptomatology of the psychopath or the hysteric.

The existence of these two relatively independent factors is supported by other data. North (1949) factor-analyzed Guilford's Inventory of Factors S, T, D, C, and R and found two primary dimensions which he called Cycloid Emotionality and Depression, and Impulsiveness or Freedom from Restraint. Kassenbaum, Couch, and Slater (1959) factor-analyzed 32 scales from the Minnesota Multiphasic Personality Inventory and found three factors, the first two of which were called Ego-Strength vs. Ego-Weakness, and Introversion-Extroversion. An analysis of the items used by the three investigators indicates that the three pairs of factors appear to be equivalent. The factor which is variously called Neuroticism, Ego-Weakness vs. Ego-Strength, Cycloid Emotionality and

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[2] The other two personality dimensions need not concern us here: General intelligence was discussed above, and psychoticism is relevant only to extreme maladaptive behavior.

Depression includes such items as "Are you frequently in low spirits?", "Are you inclined to be moody?", and "Have you often lost sleep over your worries?" The factor called Extroversion, Impulsiveness or Freedom from Restraint includes such items as "Do you like to mix socially with people?", "Do you prefer action to planning for action?", and "Do you usually take the initiative in making new friends?"

The three studies reported above provide persuasive evidence of the reality of the two dimensions of personality reported by Eysenck. His interpretation of their meaning requires further exploration. The psychological meaning of factors can never be determined by factor analysis. The meaning must be derived by relating the factors to an integrated theory which is capable of generating testable hypotheses.

A method of beginning is to examine the relationship between the concepts of "anxiety," "neuroticism," and "introversion-extroversion." Anxiety is a subjective feeling, while neuroticism and introversion-extroversion are descriptions of behavior. Bendig (1958) found a very high correlation (.77) between MAS anxiety and MPI neuroticism. This high correlation helps to explain why these two variables seem to have a similar relationship to learning curves. The Yerkes-Dodson Law of learning states that the optimum drive required for efficient learning is inversely related to the complexity of the task. Thus, the relationship between drive and learning is curvilinear with drive intensity which is too great or too little for the particular task reducing the amount of the learning. It also means that the optimum level is higher for a simple task than it is for a complex one. Scales measuring both anxiety and neuroticism have shown this same curvilinear relationship with learning curves, indicating that they may be at least in part measuring the same thing.

These findings parallel the results from physiological research, which has developed a variety of evidence that the efficiency and adaptiveness of behavior improves with increased physiological arousal (heart rate, blood pressure, etc.) up to a point, but are impaired when arousal exceeds an optimal level (Berlyne, 1964). Hokanson and Burgess (1964) compared the performance of subjects with a high and low heart rate on a digit-symbol problem immediately before and after a frustration manipulation which raised the heart rate about 20 beats per minute. The high-arousal subjects achieved higher initial performance scores, but frustration resulting in increased heartbeat which was associated with significantly increased performance of the low-arousal subjects decreased performance of the high-arousal subjects.

Returning to Eysenck's statement that his neuroticism scale is related to individual differences in autonomic reactivity, it seems a misnomer to label it "neuroticism." It is reasonable to assume, as Eysenck does, that the more autonomically reactive the individual is, the more prone he will be to neurotic disorders. On the other hand, the less autonomically reactive he is, the less likely he will be able to mobilize his energies effectively in an effort to adapt to his life situation. Therefore , either extreme will result in maladaptive behavior.

Since it has been established that the neuroticism and anxiety scales are positively correlated, it is now desirable to consider the differences that may exist between the two concepts. As was stated earlier, items used to measure anxiety relate to subjective feelings. The relationship between physiological arousal can result either from anticipation of pleasures or from specific of general fears. In most situations, excessive arousal which results in a disruption of performance comes from fear. If the disruptive arousal lasts for a period of time, it is most likely related to a vague fear or anxiety. Defense mechanisms become established protecting the individual from the effects of excessive arousal. One such mechanism, repression, results in the submersion of anxiety so that it is not experienced and thus prevents excessive arousal. An anxiety scale can only measure the anxiety which is experienced and cannot measure that which is repressed. The neuroticism scale, because it considers behavior, can measure the effects of both free-floating and repressed anxiety, and therefore must be considered a better measure of autonomic reactivity.

On the other hand, the neuroticism scale uses items which are related to both extremes of the arousal continuum. For the most part, it is probably measuring maladaptive levels of arousal and therefore subjects with very different responses to life situations can get the same score. For example, Miller (1951) studied the responses of psychiatric patients to the threat of failure. He found that neurasthenics (pathologically low arousal level) and hysterics (pathologically high arousal level) had opposite reactions. The neurasthenics set their aspirations so high that on the average they fail to attain their goals. This group finds it difficult to predict anything but improvement. Thus they are the victims of a vicious cycle. High aspiration increases the probability of failure, which leads to increased anxiety. To relieve the anxiety they aim for greater success and raise their aspirations, and this in turn increases the probability of failure Hysterics, in contrast, are preoccupied with avoiding failure. Since they consistently predict that their scores will go down, they seldom fail to exceed their predictions.

Chance (1960) makes a similar point when she says that two patterns of setting levels of aspiration appear to be more often characteristic of maladjusted subjects than normal subjects. They either set very high (compensatory or wishful) or very low (protective) levels of aspiration. It appears that these dimensions of maladjustment in personality functioning are measured by two special MMPI scales: A(Anxiety) and R (Repression), devised by Welsh (1956). It is assumed that the sensitizer (A) is an individual who anticipates and fears failure and criticism and who deals with the situation by "admitting it first." The repressor (R) is an individual who avoids discomfort by denying negative things about himself.

Subdividing the neuroticism scale so that scores can be obtained on the anxiety and repression variables seems a necessary thing to do if the goal is to predict pathological behavior. If the goal is to predict adaptive behavior, it seems reasonable that a measure is needed of individual differences in autonomic reactivity within the adaptive range and the specific circumstances in which pathological reactions will occur. A promising approach is the study of Alpert and Haber (1960) reported above, in which they investigated the possbility that anxiety might have either a facilitating or debilitating effect on academic performance.

The notion that a high level of anxiety creates a drive which, over a period of time, leads to productivity appears to be related to the ideas advanced by a number of theorists. Weber (1930) talks about the "Protestant ethic." Riesman (1950) describes the "inner-directed" character type in whom the parents have started a gyroscope spinning which will both energize and direct the child for the rest of his life. Fromm (1939) discusses the relationship between anxiety and the rise of capitalism:

> But the particular emphasis on a virtuous life which was characteristic for Calvinism had also a particular psychological

> significance.... The state of anxiety, the feeling of powerlessness and insignificance, and especially the doubt concerning one's future after death, represent a state of mind which is practically unbearable for anybody. Almost no one stricken with this fear would be able to relax, enjoy life, and be indifferent as to what happens afterwards. One possible way to escape this unbearable state of uncertainty and the paralyzing feeling of one's insignificance is the very trait which became so prominent in Calvinism: development of a frantic activity and a striving to do something. Activity in this sense assumes a compulsory quality; the individual has to be active in order to overcome his feelings of doubt and powerlessness....
>
> What was new in modern society was that men came to be driven to work not so much by external pressures but by an internal compulsion which made them work as only a very strict master could have made people do in other societies. The inner compulsion was more effective in harnessing all energies to work than any other compulsion can ever be.
>
> Undoubtedly Capitalism could not have been developed had not the greater part of man's energies been channeled in the direction of work. The drive for relentless work was one of the fundamental production forces, no less important for the development of our industrial system than steam and electricity.

Theoretically, as well as experimentally, levels of anxiety--the shadow that the future casts over the present--seem to be significantly related to productivity. It permits anticipated future adverse consequences of behavior to be considered and helps energize productive behavior so that the individual will have other alternatives available to him and does not need to settle for an easy, immediate solution.

Evidence has been presented that the "neuroticism" factor is, as Eysenck suggests, related to autonomic reactivity. Evidence will now be presented that the "introversion-extroversion" is a socialization factor. Neuroticism is related to anxiety, level of activation, or level of energy mobilization. Introversion-extroversion is related to impulse control, time perspective, and deferment of gratification. A person at the extroversion pole will be spontaneous, impulsive, and uncontrolled. Delinquents typically score high on extroversion scales and low on deferment-of-gratification and time-perspective scales. On the other hand, a person at the introversion pole will be overcontrolled and completely lacking in spontaneity, and will get very little satisfaction from his activities. The controls can be in a number of areas which may or may not be correlated with each other. The controls may relate to information processing (thinking introversion), or to interpersonal relations particularly relating to sex and aggression (social introversion). The controls may be based on fear of the future and the desire to avoid making the wrong choice, or they may be based on expectations of greater future satisfactions through deferring immediate gratifications.

A number of studies have found introversion related to academic achievement, as Bendig (1960) and Lynn (1959). Eysenck reports that in level-of-aspiration experiments subjects high on the extroversion pole tend to overestimate their performances and are little bothered by failure, while subjects falling at the introversion pole tend to underestimate their performances and are preoccupied with their failures (Eysenck, 1953). He also reports that extroverts show greater decrements on an intelligence test by taking longer to obtain correct solutions toward the end. In a study of fluctuation of attention, Singh _et_ _al_. (1961) found that extroverts fluctuated more than introverts.

In a related study of deferred gratification, Strauss (1962) concluded that learning to defer need gratification seems to be associated at all levels of the status hierarchy represented by his sample; and hence such deferment can probably best be interpreted as one of the personality prerequisites for achievement roles in contemporary American society.

It should be noted that both the neuroticism and extroversion-introversion factors were derived for the most part from studying maladaptive behavior. As concepts, they have not proved particularly useful for describing adaptive behavior. Eysenck may turn out to be right in postulating underlying physiological elements such as autonomic sensitivity and conditionability, but there are also significant differences in the way various individuals adapt to their life situation. Unfortunately, the experiments have not yet systematically investigated the performance consequences of the different possibilities.

Authoritarian Personality

Probably the most extensive study of the relation between attitudes and personality dynamics is that of Adorno _et al._ (1950). These investigators were guided by the overall hypothesis that

> The political, economic, and social convictions of an individual often form a broad and coherent pattern . . . and . . . this pattern is an expression of deep-lying trends in his personality.

To test this notion, a scale was constructed to measure ways of feeling and thinking assumed to characterize people who have a readiness to accept an anti-democratic ideology. The scale is called the F-scale (Fascism) and is considered a measure of authoritarianism. The authoritarian personality is described as having great concern with authority, both in his own exercise of it, as well as his deference to superior authority. Other assumed characteristics include extreme conventional behavior, exploitation of other people, a general lack of self-understanding, and a rigidity of thinking.

Titus and Hollander (1957) reviewed evidence on use of the F-scale. They concluded that the F-scale correlated positively with ethnic prejudice, conservative political attitudes, and an emphasis on discipline in parent-child and teacher-student relationships. A study of military personnel indicated that a high F-scale score may indicate a person's lack of social intelligence or social perception, thus making him less able to deal effectively with the needs of others and consequently less acceptable to his peers as a leader (Haythorn, 1953). Carter and Haythorn (1954) came to a similar conclusion. They found that emergent leaders in low F-scale groups, as compared to high F-scale groups, were more sensitive to others, more effective leaders, more prone to make suggestions for action subject to group sanction, and less likely to give direct orders to others. No correlation was found, however, between the F-scale and neuroticism or chance-taking behavior. Mogar (1960) found that persons with high F-scale scores make more extreme judgments than low F-scale subjects, and are more committed to their judgments. Brown (1953) found that high F-scale subjects used more rigid methods of problem solving under stress than they do in a relaxed social situation. It was assumed that in child training, the combination of emphases on dependence, competitive success, and avoidance of failure tends to produce both authoritarianism and anxiety over achievement that motivates a defensive rigidity. Steiner and Johnson (1963) found F-scale scores to correlate positively with a paper-and-pencil measure of propensity to expect people to be thoroughly good or thoroughly bad. Kelman and Barclay (1963) found that low scorers on the F-scale are persons whose psychological universe is relatively wide. They see events in a variety of contexts. They are aware of the existence of a range of customs, values, and approaches to life. They expect differences between people and are tolerant of them. High scorers in contrast, are persons who move in very narrow circles. They see events only in the context of their own limited frame of reference. They do not recognize the existence of a range of values and approaches and are intolerant of differences.

The relationship between authoritarianism and leadership effectiveness varies depending on the nature of the task and the work group. Vroom (1959) studied two different operations within a single industrial organization. Significantly different results were obtained in these two different situations. Employees in small work groups which were characterized by a great deal of interaction among workers, by interaction between workers and their supervisors, and by a high degree of interdependence had more positive attitudes toward equalitarian leaders. On the other hand, employees in large work groups in which opportunities for interaction among workers, and in which interaction between workers and their supervisors were greatly restricted, and in which individual employees were highly independent, were found to have more positive attitudes toward authoritarian leadership. Shaw (1959a) found that groups led by authoritarian leaders performed relatively better in a centralized communications net; whereas groups led by non-authoritarians performed relatively better in decentralized communication nets. In a parellel study (Shaw, 1959b) it was found that authoritarians performed relatively better in a power structure created by giving one group member complete authority to make decisions, while non-authoritarians performed better in undifferentiated power structures in which all members had an equal voice in making decisions. Ziller (1959) found that high F-scale leaders were relatively more willing to assume responsibility for group action under conditions of uncertainty with regard to group security.

It seems clear from the above evidence that the relationship between leadership effectiveness and F-scale scores varies depending on the situation. It is suggested that if decisiveness of action is desired, an authoritarian leader may be most effective. If complex problem solving behavior is desired from the work group, equalitarian leadership is likely to be most effective.

Jensen (1958) is very critical of the work stimulated by the "authoritarian personality." Much of it, he believes, consists in correlating one unknown with another, and it is now clear that the F-scale is multidimensional and all but a minor portion of its variance can be attributed to a number of factors that have little to do with the content validity of the scale. Factors of intelligence, educational level, response set (acquiescence), general maladjustment or neuroticism, and probably a social-desirability response factor are involved. Perhaps another factor is a tendency to be extrapunitive (high F) or intrapunitive (low F) when frustrated. In the following sections of this chapter, we will examine research efforts designed to study some of these variables.

Intolerance of Ambiguity

A line of investigation closely related to the authoritarian personnel is the study of intolerance for ambiguity. Frenkel-Brunswik (1949) proposed that some people find it difficult to tolerate or manage cognitive ambiguities, inconsistencies, and surprises. Such people tend to display a generalized tendency to dichotomize the world. Things and people are seen as all good or all bad; the world is black or white. When they are faced with an ambiguous situation, they will quickly fix on one concrete interpretation. This way of managing ambiguous situations is said to characterize much of their behavior--their cognition of persons and objects, their interpersonal relations, their ways of coping with problems. They are reluctant to think in terms of probabilities but want things to be definite and therefore safe.

As support for these assumptions, Frenkel-Brunswik (1949) cites data showing that ethnically-prejudiced children also tend to subscribe to statements in a personality inventory which were expressly designed to reveal a dichotomizing attitude, a rejection of the different, or an avoidance of ambiguities in general. It was also thought that "authoritarianism" as measured by the F-scale would be related to "intolerance for ambiguity." However, Davids (1955) reported that he was unable to find such a relationship. Guilford *et al*. (1959) found support for the concept through factor analysis of personality inventory scores. They identified a factor whose two defining scores are Black-White Thinking (e.g., feels there are just two ways to attack any problem--the right way and the wrong way) and Need for Definiteness (e.g., does not like things to be indefinite and uncertain). They found this factor to be correlated somewhat negatively with scores on various tests of thinking ability.

Messick and Hills (1960) designed separate tests to measure the tendency toward perceptual closure and the tendency to generalize quickly from specific cues. They found significant correlation between the two measures, and they suggest that this contributes to the construct validity of "intolerance for ambiguity." They also point out that the concept of "cautiousness" presents an alternative rationale for the test procedures and is consistent with the obtained results.

Brim and Hoff (1957) found situational factors influenced the desire for certainty. Under conditions of frustration, individuals tended to want more certainty. This finding may be related to the results obtained by Brown (1953), which have already been discussed. He found that high F-scale individuals under stress become more rigid in their problem-solving behavior. Perhaps the authoritarian person becomes "intolerant for ambiguity" in situations in which he is concerned with avoiding personal failure. This suggests that people may vary in their "intolerance for ambiguity" depending on the situation and how much threat it creates. People with a great deal of self-confidence who seldom feel threatened will usually have more tolerance for ambiguity than persons low in self-confidence.

Closed-Mindedness

Another outgrowth of the work with the Authoritarian Personality is the research on closed-mindedness. Rokeach (1960) has suggested that open versus closed-mindedness is a general personality trait which is related to the ability to form new belief systems of various kinds. To measure this variable, he has developed a Dogmatism Scale, which he would have preferred to call the "Open-Closed Belief System Scale" if it were not so clumsy. Rokeach begins with the work done with the F-scale. In his view, the name "Authoritarian Personality" leads to conceptual confusion because it was designed as a measure of "Fascist Authoritarianism." Authoritarianism and intolerance in belief and interpersonal relations are not the monopoly of Fascists, anti-Semites, Ku Klux Klanners, and ultra-conservatives. These phenomena can be observed in Marxists, liberals, Freudians, Unitarians, academicians, and art critics, to name but a few. Rokeach believes, therefore, that it is desirable to measure the degree of openness or closedness of the individual's belief system apart from the content of the belief. Evidence that Dogmatism scale has been successful in doing this is shown by the fact that Communists and conservatives do not differ significantly on it, while they differ dramatically on the F-scale (Rokeach, 1960).

In two separate studies by Rokeach scores on the Dogmatism Scale were found to be unrelated to intelligence as measured by standard intelligence tests. These zero-correlations strongly suggest that open-mindedness and intelligence represent different aspects of an individual's personality, and also raise interesting questions about what intelligence tests are really measuring.

Ehrlich (1961) found learning in a classroom situation was inversely related to level of dogmatism after controlling for academic aptitude. Fillenbaum and Jackman (1961) replicated Rokeach's original work, finding that high-dogmatism subjects did not do so well as low-dogmatism subjects on a problem which required that three commonly-held beliefs be overcome and be replaced by three new beliefs before the problem could be solved.

Rokeach makes a distinction between dogmatic and rigid thinking in that dogmatism refers to resistance to change of systems of belief, while rigidity refers to resistance to change of single beliefs (or sets or habits). For example, we ordinarily say that a person is performing a task rigidly, not dogmatically. Conversely, in everyday life, we speak of a dogmatic, rather than a rigid, theorist, or a Marxist, or a Freudian. To the extent that a person is said to be characteristically rigid, his analytic thinking should suffer. The source of his cognitive troubles should be traceable to the fact that he cannot break down or overcome beliefs when they are no longer appropriate, in order to replace them with more appropriate ones. Thus, rigidity in thinking should be expected to lead to difficulties in thinking analytically. On the other hand, to the extent a person is said to be characteristically dogmatic or closed in his thinking, he will be basically concerned with the preservation of his total system of belief rather than the preservation of a particular belief in his system. High rigidity leads to difficulties in the analytic phase of thinking, and high dogmatism leads to difficulty in the synthesizing phase of thinking. In a number of experiments, Rokeach has shown that there is no difference in the performance of high and low-dogmatic subjects on the analytical phase of the problem, but there is a substantial difference on the synthesizing phase of the solution of the problem, with the low-dogmatic subjects doing better. Using a rigidity scale constructed by Gough and Sanford (1952), however, he finds that high-rigidity subjects do not do so well on the analytic phase of the problem as do low-rigidity subjects. The correlation between an intelligence test (ACE) and the Rigidity Scale was -.31, in contrast to the zero-correlation with the Dogmatism Scale. However, scores on Dogmatism and Anxiety correlated around .45, while there was no significant correlation between scores on Rigidity and Anxiety.

A further study of the Dogmatism Scale was reported by Restle, Andrews, and Rokeach (1964). High- and low-dogmatism subjects were tested in discrimination and reversal learning set (RLS) problems and in oddities learning. Low-dogmatism subjects were found to be better at oddities learning and high-dogmatism subjects better at RLS problems. The interpretation was that high-dogmatism subjects depended passively on authority, whereas low-dogmatism subjects seek an underlying principle. In the RLS problems, the experimenter is acting as a capricious authority. The high-dogmatism subjects willingly follow the experimenter, whereas the low-dogmatism subjects seek a general principle where there is none, and thus do not perform efficiently. The oddity problem requires the subjects to find a principle which will predict the experimenter's reinforcements, and low-dogmatism subjects are well fitted for such a task. High-dogmatism subjects follow the experimenter's reinforcements passively and do not quickly find the principle.

Differences were also found on time perspective. High-dogmatism subjects were oriented more toward the future, and low-dogmatism subjects were more toward the present Such differences, furthermore, were associated with differences in anxiety. The high-dogmatism subjects appear to be more anxious about the future and seem to feel more compelled to anticipate the outcome of events taking place in the present.

Some information about the relationship between dogmatism and vocational choice was obtained through a study of religious-minded persons enrolled in a special training program in a denominational college in preparation for positions as Boy Scout executives or YMCA or YWCA secretaries. It was found six years later that the subjects scoring in the middle range on dogmatism were more likely to have stayed with the work. High-dogmatism subjects went into the military services, engineering, banking, or managerial postions in business, while low-dogmatism subjects became ministers, teachers, other types of social-service workers, or housewives. It should not be assumed from these results that there is necessarily a close relationship between low-dogmatism and social service, because the entire population included in this study started with very high religious and social-service values.

In summary, dogmatism as defined by Rokeach seems to facilitate some types of performances and impede others. Perhaps dogmatism is the variable in the F-scale which is correlated with effective performance in a centralized communication net (Shaw, 1959) and serves the adaptive purpose of making action more decisive and dependable at the cost of making it less flexible.

Conformity to Group Pressures

The question of conformity has been studied by a number of investigators. Conformity, as distinguished from uniformity and conventionality, means yielding to group pressures. Conformity postulates conflict between those forces in the individual which tend to lead him to act, value, and believe in one way, and those pressures emanating from the society or group which tend to lead him in another way. Not all acts of conforming are identical in psychological meaning. One significant distinction is between "expedient" conformity, in which the individual outwardly agrees with the group and "true" conformity, in which the individual both outwardly and inwardly is brought to agree with the group. "Expedient" conformers tend to revert to their private judgment when group pressure is removed and are different in personality make-up from "true" conformers (Krech, Crutchfield, and Ballachey, 1962).

The initial experiments of Sherif (1935) involving the autokinetic effect showed that individuals are influenced by the opinion of others and that group influence will lead to a marked similarity of judgments. Asch (1951) has developed a technique which enables the experimenter to place an individual under group pressure that can be systematically manipulated and controlled, and then measure the individual's readiness or tendency to yield to such pressures. Marked individual differences in response to the majority pressure were found, ranging from complete independence of the majority by some individuals to complete yielding by other individuals. The intercorrelations of yielding scores for different kinds of items and tasks have also been found to be of appreciable size

(Rosner, 1957), which is evidence that there are stable differences in conformity tendencies in people.

Krech, Crutchfield, and Ballachey (1962) have summarized the differences between people who tend to conform, or tend to remain independent under group pressures. These findings are not based on a single measure in a single sample, but upon multiple measures--including objective tests, personality inventories, and projective techniques.

With respect to cognitive functioning, the conformists proved to be significantly less intelligent than the independent person. Conformists show greater tendencies toward rigidity of cognitive processes and poverty of ideas, as contrasted with the greater capacity for cognitive restructuring and for novel ideas found in the independent subjects.

With respect to motivational and emotional functioning, the conformists were clearly lower in "ego-strength and in ability to cope under stress." For example, a measure based on the readiness of soldiers to fire their guns effectively under battle conditions in the Korean conflict is found to correlate -.38 with conformity scores in a sample of military officers. The conformists tend to exhibit emotional constriction, lack of spontaneity, repression of impulses, and indirect expression of hostility to a greater degree than do the independents. They also tend to be more anxious.

With respect to self-concept, conformists were inclined toward pronounced feelings of personal inferiority and inadequacy. They tended to be less insightful and realistic in their self-perceptions than are the independent subjects.

With respect to interpersonal relations, the conformists exhibited intense preoccupation with other people, as contrasted with the more self-contained, autonomous attitudes of the independent persons. The interpersonal behavior of the conformists tends to show far more passivity, suggestibility, and dependence on others, while at the same time there is considerable evidence of basically disturbed and distrustful attitudes toward other people. Moreover, the conformist proved to be poorer than the independent person in his ability to judge other people's traits accurately.

With respect to personal attitudes and values, the conformists express attitudes and values of a far more conventional and moralistic nature than do the independent subjects. This is often coupled with a low "tolerance for ambiguity" and a rigid, dogmatic, and authoritarian outlook.

Krech, Crutchfield, and Bellachey (1962) go on to say that the underlying dynamics of conformity to group pressures appear to be that group pressures on the individual tend to arouse states of emotion in him. Some individuals, confronted with a gross discrepancy between their own judgments and that of the group, are led to doubt seriously the competence of their own thought processes, come to feel dejected, depressed, and isolated--an emotional state wherein susceptibility to conformity is heightened. Hoffman (1957) has presented evidence that conformity not only can reduce anxiety but can avoid it; that is, conformity can serve a defensive function.

Emotional arousal need not always, however, lead to increased conformity. In some circumstances, the state of emotion may render the person more resistant to the group judgment. His cognitive processes may undergo rigidification and narrowing; he may thus focus only on his own judgment, stubbornly shutting out information from the group.

This kind of defense against the group pressure is not, however, synonymous with increased capacity for true independence of judgment. The individual becomes insensitive to whatever valid information may inhere in the group judgment, and consequently he may come to cope more poorly in the situation as a whole. "Blind" independence can prove as stupid and as socially and personally deleterious as "blind" conforming.

Individual differences doubtlessly play a large role in governing the manner in which emotional arousal affects conformity. For example, individuals with high tolerance for stress will be affected quite differently from persons who "panic" easily under stress.

Again, as in the case of a number of the other measures we have reviewed, either extreme of the conformity continuum is likely to lead to maladaptive behavior. Persons high on conformity can be expected to do better on tasks which require unquestioning compliance. Persons low on conformity will do better on tasks requiring ability to maintain a point of view regardless of the opinions of others.

Field Dependency vs. Field Independence

Over the past two decades, Witkins and his associates have been studying individual differences in perception. They have found that some subjects find it difficult to overcome the influence of the surrounding field or to separate an item from its context. It is because of this characteristic that their perception has been designated "field-dependent." Other people are able to distinguish an item from its context. Their perception is "field-independent." In the general population, performance reflecting the extent of people's field-dependence or independence are ranged on a continuum rather than falling into two distinct categories (Witkins, et al., 1962).

After extensive research, they are now able to offer a fairly comprehensive characterization of people who show a typically field-dependent or field-independent orientation:

> Field-dependent people are likely to change their stated views on a particular social issue in the direction of the attitudes of authority. They are also particularly attentive to the forces around them and, as a result, tend to be better than relatively field-independent persons at recognizing people they have seen only briefly before. Their impressions of people are usually based on the physical characteristics these people show and the actions they engage in. On the whole, they favor occupations that involve contact with people and that are popular within their group.
>
> People whose performances . . . indicate a predominantly field-independent way of perceiving present a direct contrast in many of these attributes. Not always, however, are the characteristics common to the field-independent perceivers polar opposites of those found among field-dependent perceivers, and they may or may not contribute to optimal adjustment. Thus, although field-independent people are often able to function with a fair degree of autonomy from others, some of them are strikingly isolated individuals, over-controlled, cold and distant, and unaware of their social stimulus value. We have, in fact, frequently encountered field-independent performances among hospitalized psychiatric patients who were actively delusional and apparently destined to remain in an institution for the remainder of their lives.

In specific experiments with children, field-independent subjects were more likely to be active and task-oriented in a testing situation, and field-dependent subjects were more likely to display an anxious, driven talkativeness during testing. In a task which is well-defined, mechanical, and highly monotonous, so that satiation is easily achieved, and where continuing is seen by the child as conforming to the wishes of an authority figure, field-dependent children were more apt to persist at the task than field-independent children. Crutchfield, et al. (1958), in a study of Army Air Force captains, found the following adjectives used to describe officers at different points on the variable:

--Field-Dependent

--Concerned with good impression, gregarious, affectionate, considerate, tactful

--Intermediate

--Energetic, adventurous, social poise and presence, non-conforming

--Moderately Field-Independent

--Demanding, effective leader, takes ascendant role, manipulates people, self-reliant

--Extremely Field-Independent

--Cold, and distant with others, unaware of their social-stimulus value, concerned with philosophical problems, individualistic, strong

In a series of studies relating to the nature of controls and defenses, it was found that a group of obsessive-compulsives were significantly more field-independent than a group of hysterics. Thus, it appears that the controls and defenses of field-dependent subjects tend to have a relatively low degree of structure, while those of field-independent subjects tend to have a relatively high degree of structure. In another study measuring fantasied aggression, it was found that field-independent subjects showed greater capacity for control of aggression impulses. In the previously cited study of Air Force Captains, the 20 most field-dependent subjects were described as follows: "Undercontrols impulses," "confused, disorganized, and unadaptive under stress," " acts with insufficient thinking and deliberation." In contrast, a group of extremely field-independent subjects was described as overcontrolled. An item which significantly distinguished most field-dependent subjects from the remainder of the group was "emphasizes oral pleasure; self-indulgent."

It can be expected that there would be a great deal of difference in the occupations and work performance of these different groups. Extreme field-dependent individuals depend on other people and are likely to be easily influenced and led. Extreme field-independent individuals depend primarily upon themselves and are likely to be very difficult to influence or lead and to have difficulties in interpersonal relations.

Response Styles: Social Acquiescence and Social Desirability

The growing body of research on individual response styles in questionnaire replies have revealed consistent individual differences in response styles, which appear to be correlated with other behavioral characteristics of the respondents. Much recent research on the consistent tendency to agree or disagree with questionnaire items regardless of their content has centered upon the F-scale, all the items of which are scored so that agreement supposedly indicated authoritarian attitudes. Other research evidence on the tendency to agree or disagree with at least some degree of indiscriminateness on personality and attitude scales seem to have some generality over scales with differing content. Clinical and experimental results strongly suggest that those who tend to agree to items on scales or inventories are quite different in personality structure and dynamics from those who tend to disagree.

Couch and Keniston (1960) developed an Overall Agreement Score questionnaire to measure tendency to agree or disagree. They found that the naysayers present a picture of calm, controlled stability, while yeasayers seem more emotionally determined, openly admitting anxiety and distrust. Thus the yeasayer's problems center around inadequate controls, while the naysayer's are focused on excessive inhibitions. The yeasayers accept stimuli both by admitting them to consciousness without censorship, alteration, or assimilation,and by agreeing with, acting out, and otherwise yielding to the pressures of stimuli exerted on them. The naysayer tends to reject these same stimuli, which may be either internal (impulses, needs, whims, sudden moods) or external (suggestions, provocations, coercions, excitement, novelty). The most obvious manifestation of the general acceptance of stimuli takes the form of "agreeing" with, marking "yes," or checking "true" to a wide variety of otherwise unrelated items and statements.

Kuethe (1960) presents data showing that yeasayers may not all be alike. He divided the yeasayers into groups which scored high or low on the MMPI Psychasthenia Scale. He found that yeasayers low on psychasthenia were much more influenced by a suggestion than were high-psychasthenia yeasayers. Foster (1963) shows that an acquiescence response set does not correlate with conformity to group pressure. It may represent "expedience" rather than "true" conformity.

Another response style which appears to be correlated with other behavioral characteristics of the respondent is the tendency to select the socially desirable answer to a question. Husek (1961) found low but significant positive correlations between social desirability scores (SDS) and both self and peer ratings of "intelligent," "good student," and "leader" among high school students. Marlowe and Crowne (1961) found high SDS subjects had a more favorable attitude toward a boring task. In this experiment, subjects were asked questions about a tedious spool-packing task they had just completed. The high SDS subjects were much more likely than low SDS subjects to say that they had enjoyed the task, that they had learned a lot from it, that the study had scientific importance, and that they would participate in a similar experiment. Kriedt and Dawson (1961) found a significant positive correlation between SDS scores and clerical job performance. Fredricksen (1963) found that those subjects who picked the socially desirable options relating to job elements were likely to follow leads suggested by their superior in the in-basket exercise (a task simulating aspects of an executive's job) and to show generally good performance both in terms of quantity and quality of work. He suggests that some underlying motivational factor such as anxiety or need for recognition may account for both the desirability-response bias and the characteristics of the in-basket performance.

Allison and Hunt (1959) correlated SDS scores with Expression of Aggression scores from a paper-and-pencil situational frustration test. They found that high SDS scores are associated with suppression of aggression in ambiguous situations where the culturally acceptable responses are unspecified. Their tentative conclusion was that high social-desirability tendencies are found in subjects who are "other-directed," whereas low social-desirability tendencies characterize "inner-directed" individuals.

Persuasability

The relation between an individual's personality and the modifiability of his attitudes is a complex one which has been subject to only a few studies.

Individual differences in intelligence help determine differences in rate of attitude change. Swanson (1951) examined the relation between intelligence and amount of information about government activities. His results indicate that:

> Intellectual ability is the most important trait for predicting who learns from this class of news, and . . . understanding the news about government imposes an intellectual task of significant dimension upon the individual.

On the other hand, less intelligent persons, once reached by the propagandist, may be less able to evaluate their material critically and hence may be more susceptible to the propaganda. Also, there is experimental evidence that the less intelligent person is more conforming to the attitudinal pressures of his group (Krech, *et al*., 1962).

Linton and Graham (1959) administered a large battery of personality tests to a group of high-school students in an attempt to tease out personality correlates of persuasibility. On the basis of the subject's endorsement or rejection of a communication designed to change attitudes, they divided their sample into "changers" (attitudes changed in the direction of the communication), "nonchangers" (attitudes unaffected by the communication), and "negative changers" (attitudes changed in a direction opposite to the communication). They found there were significant personality differences among the three groups:

1. Changers

The person who is easily persuaded is likely to guide his behavior by external standards in other situations as well, to have values that favor conformity, to have an immature and weak concept of himself, to be unimaginative, and to have a limited range of interests. These individuals are not given to self-analysis, prefer to avoid thinking about their problems, and are likely to use repression as a characteristic defense. They apparently lack, therefore, strong sources of direction within themselves; and they come to terms with life by valuing and relying on external sources of direction. They place high value both on support from authority and on support from peer groups.

2. Non-changers

The person who is comparatively unaffected by the persuasive communication is likely to be little affected by external standards in other kinds of situations, to have a mature and strong self-image, to value subjective feelings, and have a relatively rich inner life, to examine himself and his role in life to an extent that may include marked self-criticism, and to be independent without being rebellious. Non-changers show that they value subjective feelings, ideas, and intellectual activity, self-expression, and creative achievements, and they say they would try to live by these values in the face of opposing conformity pressures and social restrictions. Their behavior in the experimental situation shows competence and independence of judgment.

3. Negative Changers

The pattern for the negative changers suggests that they are engaged in a struggle to win out over what they perceive as hostile, potentially engulfing forces. They perceive the world as a hostile, destructive place, and they consider themselves at odds with society and strongly reject parental and other authority but do not necessarily reject the peer group. They see themselves as strong, active, and assertive. They seem deficient in the warmer aspects of human relationships and emotions. In the experimental situations, there is evidence that they are affected by the sources of the influence but actively try to cope with the tasks and fight against being influenced rather than being relatively unaffected as are the non-changers.

The authors sum up their findings with the following statement:

> The present study supports the idea that there exists an underlying tendency in a person which affects his perception, his cognitive processes, his attitudes and values, and his social behavior. This tendency, which might be termed "self vs. field-orientation," predisposes the person to rely either on sources of direction within himself or to be easily influenced by external factors. Furthermore, the strength or weakness of inner resources seems to be an important determinant of the direction of this tendency.
>
> Other studies of the personality predispositions underlying field dependence (Witkin et al., 1954) and social conformity (Linton, 1954, 1955) have pointed to the fact that susceptibility to influence in these situations is related to two main areas of personality functioning: the underlying attitudes toward the self and the quality of a person's reaction to the environment--his ability to cope with it and his responsiveness to its emotional and personal aspects.

In this study it is the personality patterns having to do with attitudes toward the self which appear to be of primary importance; personality resources relating to reactivity or minimal adequacy vis-à-vis the environment do not differentiate between the opinion-change groups.

The Achievement Motive

Making use of fantasy behavior, McClelland and his associates (1953) have developed ways of measuring various human motives, such as the achievement motive. As stimuli to evoke fantasy behavior, they present pictures of simple situations which are similar to the pictures of Murray's Thematic Apperception Test; and they ask the subject to write a brief story about the picture. The stories are then scored for the frequency and saliency of ideas pertaining to success, getting ahead in life, accomplishing things, etc.

Applying the test to various samples of young American adults, the investigators found large and consistent individual differences in achievement motive scores and that these scores are meaningfully related to the person's achievement behavior in other situations. For example, in a task requiring the solution of anagram problems, subjects scoring high on achievement motive continued to accelerate in rate of production of solutions throughout the experimental period, while low-achievement subjects showed no increase in rate. This result suggests that high achievement subjects may be more likely to maintain a sustained effort over a period of time than are other subjects.

Miner and Neil (1958) found that there was a positive relationship between achievement motive and the prestige rank of the occupations preferred by the male subjects, and that high achievement motive subjects were less realistic in their occupational preferences than moderate or low achievement motive subjects. French and Thomas (1958) divided a selected group of highly intelligent subjects into those with high and low achievement motivation, and required them to solve a difficult intellectual problem. The problem had several acceptable solutions. The high achievement motivation subjects worked, on the average, twice as long as the others before giving up and were more successful in arriving at at least one solution. In the high achievement motivation group, performance correlated .36 with ability; but the correlation was zero in the low achievement motivation group. Thus, ability predicts performance only when the subjects are motivated to use that ability.

Other studies have suggested that persistence can come from two very different types of motivation. Feather (1961) found persistence in problem-solving occurred either when achievement motivation and anticipation of success are high or when motivation to avoid failure and anticipation of failure are high. Other investigators have used the achievement motive as a measure of the desire to achieve success, and test anxiety as a measure of the desire to avoid failure. Atkinson and Litwin (1960) found that in a ring-toss game in which subjects were allowed to choose their own distance from the target, that subjects high in achievement motivation and low in test-anxiety tend to select tasks that are challenging--not so easy that success is assured nor so difficult that failure is not experienced as such. Those with low achievement motivation and high test-anxiety showed a smaller concentration of challenging choices, and relatively more of those choices were in the psychologically safer extremes of difficulty, either close enough to assure success without much risk or far enough so that failure would not be experienced as such.

There is no significant correlation between achievement motivation as measured through fantasy and achievement motivation as measured through self-report inventories, and there is still considerable doubt as to the psychological meaning of achievement motivation as expressed through fantasy. Cole, Jacobs, and Zubok (1962) found that male students with superior academic records tended to have lower achievement motivations than other students. Lazarus *et al*. (1957) found that high-school students were likely to have higher achievement motivation than college upper classmen.

In a study in which the task was to report as accurately as possible the contents of a tape recording, they found two types of performances reflecting preferred styles--a "literal" and a "conceptual" approach. Persons using the "literal approach" attempted to reproduce the material verbatim. The conceptual approach involved attempting to report the meaning of the material. They found the "literal" approach to be more characteristic of the less advanced students and the "conceptual" approach of the more advanced students. They also found a positive relation between achievement motivation and verbatim, literal performance.

Their interpretation is:

> We suggest that what distinguishes between individuals of greater and lesser maturity is the relatively greater development in the former of ego-control or regulative processes which interact with, and modify the expression of motive states leading to the discharge of motivation along more appropriate lines than fantasy.

Creativity

Studies on the personality characteristics of creative individuals have been of great interest to researchers during the last decade. MacKinnon (1962) has provided an overview of the findings of creativity research carried out at the Institute for Personality Assessment and Research (IPAR) at the University of California. He sets three conditions for creative behavior to meet: a novel, or at least statistically infrequent, idea; adaptation to reality; and sustaining the original insight, evaluating it, elaborating it, and developing it. The creative persons studied at

IPAR were identified by peer nominations and all were prominent persons in creative lines of endeavor. A zero-correlation was found between intelligence and creativity. Above a certain required minimum level of intelligence which varies from field to field and in some instances may be surprisingly low, a higher level of intelligence does not correspond to an increase in creativity. All creative groups have shown a clear preference for the complex and asymmetrical; and in general, the more creative a person is, the stronger this preference. Another consistent finding is that the creative groups score unusually high on the femininity scales of the MMPI and the Strong Vocational Interest Blank.

With respect to styles of thought, MacKinnon makes the following statements which are part of the rationale for the Myers-Briggs Type Indicator:

> Whenever a person uses his mind for any purpose, he performs either an act of perception (he becomes aware of something) or an act of judgment (he comes to a conclusion about something) and most persons tend to show a rather consistent preference for and greater pleasure in one or the other of these, preferring either to perceive or to judge, though everyone both perceives and judges.
>
> An habitual preference for the judging attitude may lead to some prejudging and at the very least to the living of a life that is orderly, controlled, and carefully planned. A preference for the perceptive attitudes results in a life that more open to experience both from within and without, and characterized by flexibility and spontaneity. A judging type places more emphasis upon the control and regulation of experience, while a perception type is inclined to be more open and receptive to all experience.

It turned out that the majority of the creative writers, mathematicians, and architects are perceptive types, and the majority of the research scientists are judging types; but even within the research-scientist group there was a positive correlation between preferences for perception and one's rated creativity as a research scientist.

Approximately two-thirds of the creative group score as introverts, although there is no evidence that within the group introverts are more creative than extroverts. Creative persons are relatively uninterested in small details, or in facts for their own sake, but more concerned with their meanings and implications. They are possessed of considerable cognitive flexibility, are verbally skillful, interested in communicating with others and accurate in doing so, intellectually curious, and relatively disinterested in policing either their own impulses and images or those of others.

According to MacKinnon, the creative person tends to be dominant, possessed of those qualities and attributes which underlie and lead to the achievement of social status, poised, spontaneous, and self-confident in personal and social interaction, though not of an especially sociable or participative temperament. He is intelligent, outspoken, sharp-witted, demanding, aggressive, and self-centered; persuasive, and verbally fluent, self-confident, and self-assured; and relatively uninhibited in expressing his worries and complaints. He is relatively free from conventional restraints, inhibitions, not preoccupied with the impression he makes on others and thus perhaps capable of great independence and autonomy and relatively ready to recognize and admit self-views that are unusual and unconventional. He is strongly motivated to achieve in situations in which independence in thought and action are called for; but unlike his less creative colleagues, he is less inclined to strive for achievement in settings where conforming behavior is expected or required. In efficiency and steadiness of intellectual effort, however, he does not differ from his fellow worker.

Taylor and Barron (1963) have edited a collection of papers originally presented at the three Utah Conferences on scientific creativity. Personality traits characteristic of creative scientists are a high degree of autonomy; preference for mental manipulations involving things rather than people; high ego-strength and emotional stability; liking for method and precision; preference for defense mechanisms such as repression and isolation; a high degree of personal dominance, but a dislike for personally-toned controversy; high degree of impulse control; a liking for abstract thinking with considerable tolerance for cognitive ambiguity; independence of judgment; superior general intelligence; an early interest in intellectual activities; a drive toward comprehensiveness and elegance in explanation; and an interest in coping with certain circumstances.

Another source of information on creativity is Holland (1961) who, in his study of National Merit Finalists, compares creative performance with academic performance among talented adolescents. The criterion of academic performance was high-school grades, and the criterion of creative performance was derived from a checklist of accomplishments assumed to reflect creative or original behavior. The results suggest that creative performance at the high-school level occurs more frequently among students who are independent, intellectual, expressive, asocial, consciously original, and who have high aspirations of future achievement. Academic achievers are more likely to be students who are perservering, sociable, and responsible, and whose parents hold somewhat authoritarian attitudes and values.

Gough and Woodworth (1960) have raised some questions about whether these might be stylistic variations among professional research scientists. A set of 56 diagnostic statements pertaining to scientific activities, values, and modes of research activity was given to a sample of 45 professional research scientists for self-descriptive sorting. A factor analysis of the intercorrelations among the scores of scientists permitted the identification of eight types; this analysis suggests that stylistic variations in scientific research methodology do exist and can be specified. The names given to the factors were: the research zealot, the diagnostician, the scholar, the artificer, the esthetician, the methodologist, and the independent.

This finding is very similar to the observation made by Gibson (1961), who maintains that the successful research-and-development organization needs the cooperation of many types of minds to carry out the great variety of tasks that lead from an imaginative concept to a well-engineered device, commodity, or service. An important function of management is the matching of assignments to the capabilities and mental attributes of the individuals, together with the establishment of an atmosphere wherein excellence of any kind receives full recognition. He goes on to say:

> If we take a cross section of productive research workers, perhaps by studying the authors of articles in the better journals, we find represented at least in six kinds of minds, (a) the Promethean or creative, (b) the critical and analytic, (c) cumulative and inductive, (d) cumulative and descriptive, (e) meticulous, (f) routine industrious. It is evident that more than one of these attributes is found in any given individual, although one will generally predominate. (a) The creative mind tries to inject something new into anything it does; it may provide the flash of genius that shows up a new continent of knowledge or gives rise to a new all-embracing theory; it may throw new light on old tough problems; it may just invent an easier and better way of doing an old job. It is a mind that transmutes ideas from one field of experience to another. (b) The critical and analytic mind takes nothing for granted but examines closely all statements presented to it, probing deeply into their consequences for consistency and rigor. It is the questioning mind so needed for clarification of complex situations and for establishing the validity of experience. (c) The cumulative-inductive mind ranges in the literature and in experiment, collecting facts and attempting to put them in order. It is a type of mind which has contributed largely to physical chemistry. (d) The cumulative and descriptive mind is that of the trained and keen observer who remembers what he sees and describes clearly for others to read. It is the mind that has laid the foundation of the complex sciences of astronomy, geology, and

> natural history. It is always evident on the frontiers of knowledge and is the stock-in-trade of the effective teacher. (e) The meticulous mind is concerned about the correctness of all details in observation, procedure, and processes. It is concerned with the search for accuracy and precision. (f) Finally, we have the routine and industrious mind that follows through relentlessly, especially where many experiments are needed to establish one fact and where repetitive processes are the essence.
>
> History has shown that all of these mental attributes have important roles to play in the sound and steady growth of all branches of science and engineering and we would be guilty of intellectual snobbery if we discounted any one of them. The meticulous worker who spends years establishing the real facts in a complex phenomenon or in perfecting a technique, or the routine-industrious man who explores an area thoroughly by a long series of measurements provide means and materials for the inductive thinker and the creative artist, materials they might not be able to get for themselves. The critical mind keeps thought and observation on the track, saving costly detours along the false trails, paying particular attention to the coherence of the inputs and the outputs. Each has his place and the secret of the efficient rise of manpower either on a laboratory scale or on a nation-wide basis lies in assigning to each mind a job suited to its attributes and carrying with it full recognition of contributions to a worthwhile objective.

Gibson goes on to state that examples of men's transferring successfully their activities from one discipline to another are common; but he believes that if creative minds are set to work on routine problems, or if routine-industrious minds are given problems that depend on creative ability, even in the fields of their own training, frustration of the men, mediocrity of product, and general waste of time are the result.

Values

Values are beliefs about what is desirable or worthwhile and what is undesirable or bad. They reflect the culture of a society and are widely shared by the members of the culture. If the individual accepts a value for himself, it may become a goal for him and a criterion against which he can evaluate himself. Many kinds of work are associated with characteristic sets of values, which frequently extend into one's personal life. If some of these values are not consonant with the individual's own values, the resulting conflict may be quite disruptive.

The "pure" scientist has traditionally prided himself on his indifference to values. The strength of this attitude is reflected in the dearth of penetrating studies of values in the psychological literature. Values seldom occur as a major concept, even in such areas as personality and social psychology. Most of the studies that have been made have used the Allport-Vernon "Study of Values," which is a self-report inventory providing scores on six scales. These scales are based on the notion of six "ideal" value types proposed by Spranger (1928): the theoretical, the economic, the aesthetic, the social, the political, and the religious. This test has been used successfully to differentiate among occupational groups, but it has not proved to be very successful at measuring different level of performance.

Super *et al*. (1959) state that tests designed to measure values can be used almost interchangeably with tests of interests. However, they go on to say that values seem to represent something more basic than interests; they permeate all aspects of life and concern life goals. Kluckholm, Murray, and Scheider (1955) make the observation that a value is not just a preference or desire, but a formulation of the desirable, the "ought" and "should"-standards which influence action. The fact that tests of values and interests are substantially interchangeable indicated that better measures of one or the other, or both, are needed.

Academic Achievement

Preparation for an occupation usually requires the completion of an academic program. Both because of its importance and because of the easy availability of subjects and criteria, a great deal of research has been conducted investigating the variables related to academic achievement. Taylor (1964) provided the following summary:

> The weight of evidence in the literature would seem to support the following conclusions concerning the relationship of certain personality traits to academic achievement:
>
> 1. The degree to which a student is able to handle his anxiety is directly related to his level of achievement.
>
> 2. The value the student places upon his own worth affects his academic achievement.
>
> 3. The ability to conform to and/or accept authority demands will determine the amount of academic success.
>
> 4. Students who are accepted and have positive relationships with peers are better able to accept themselves. Students who do not have peer acceptance generally go outside the school environment for their satisfactions.
>
> 5. The less conflict over independence-dependence relationships a student copes with, the more effort he places on achievement.
>
> 6. Activities which are centered around academic interests are more likely to produce successful achievement.
>
> 7. The more realistic the goal the more chance there is of a successful completion of that goal.

Of particular relevance to the purpose of this paper are the studies relating scores on personality inventories to academic achievement. Holland (1959 and 1960) made two studies of the relation between various personality measures and freshman college grades for a sample of very high aptitude high-school seniors. He concluded that non-intellectual variables--super-ego, persistence, and deferred gratification--are useful in predicting and understanding the nature of the academic achiever. He also found that different college atmospheres rewarded different attitudes and behavior of students.

A significant group of experiments have attempted to isolate the personality differences between a group of college students with low predicted academic achievement on the basis of academic ability tests who seem to be succeeding (overachievers) with a group of high predicted academic achievement who are failing (underachievers). In a study by Gebhart and Hoyt (1958) which was replicated by Krug (1959), the Edwards Personal Preference Schedule was administered to freshman men, and first-year grades comprised the criterion. Overachievers majoring in engineering scored significantly higher on the Achievement, Order, and Endurance scales and significantly lower on Affiliation and Heterosexuality. These scales are statistically independent within the relevant samples indicating that several patterns of over- and underachievement are present. Super (1962) has suggested an interpretation:

> The overachiever with a drive to compete strives to do his best in tasks which require skill and effort, attempts to accomplish something of great significance and do difficult jobs well, and desires to excel others in what he does; the overachiever whose predominant attitude is to organize or plan his activities quite extensively appears as more highly controlled with his energy channelled into systematic ways of doing things; and the overachiever with intellectual curiosity seems more sensitive, being attuned more to the feelings of others, and more introspective as he analyzes his own as well as others' feelings and motives. In contrast the underachiever whose behavior is characterized by change wants to do new and different things, to travel, to meet new people, to experience novelty in daily routine, and to try new and different jobs; and the underachiever who tends to place friendship above scholarship prefers to help friends when they are in trouble, to have other confide in him about personal problems, to assist others who are less fortunate, to participate in friendly groups, and to do things with friends rather than alone.

Lum (1960) used a different set of measuring instruments and came to the conclusion that overachievers have strong motivation for studying, tend to be more self-confident, and appear to have a greater capacity for working under pressure than the underachievers. The latter students show a marked tendency to procrastinate and tend to rely upon external pressures to complete assignments. They are also more critical of educational methodology and philosophy than overachievers. In a study by Gough (1964) of fourth-year medical school grades, it was found that high-ranking students were unselfish, considerate, informal, forgiving, reasonable, and self-confident. Persons scoring low were thankless, cold, prejudical, fault-finding, and restless. Two threads seem to run through all these studies. One is that the successful student has a great deal of self-control and discipline and is able to channel his energies. The other is that the successful student fits in well and does not challenge or criticize other people.

Leadership and Supervision

One of the early experiments finding individual differences in supervisory effectiveness was conducted by Feldman (1937). Supervisors of clerical work in an insurance company were shifted so that those who had been in charge of above-average work groups were shifted to below-average sections. An analysis of production one year later showed that the order of merit of supervisors remained practically the same as they had been the year before in spite of the reassignment to new sections.

At one time, leadership was thought of as a personality trait, or as a combination of personality traits, possessed by some people and not by others. Thus, the goal of early research was to distinguish those specific traits which distinguished leaders from followers. Subsequent research findings showed that the particular group situation was highly important in determining what kind of leadership would be effective in it.

A classic experiment on the relation between leadership and group performance was carried on with children (Lewin, Lippitt, and White, 1939). Three styles of leadership labeled "autocratic"(directive), "democratic" (participative), and "laissez-faire" (delegative) were used with hobby clubs made up of ten-year-old boys The leaders shifted from club to club every six weeks, each one changing his leadership style under different leaders. Thus, each club experienced each leadership style under different leaders.

The results showed the laissez-faire condition poorest in every respect. These groups accomplished least and were most dissatisfied with the club (even though they played more than they worked). The democratic condition was superior to the autocratic condition in that the democratic leader was more popular, there was less hostility, and more cooperation and originality were shown. There was also more interest in the activities of the club, and greater friendliness among the boys. They kept working when the leader left the room, whereas the boys under the other two conditions were glad to stop. In the autocratic groups, production was higher, but only when the leader was present. Four boys dropped out of the study, all during the autocratic condition. The autocratic group showed more hostility toward each other and toward the leader, made more demands for attention, and frequently treated one of their members as a "scapegoat."

Likert (1962) has summarized the results of a number of studies conducted by the Survey Research Center of the University of Michigan. The effective supervisor is able to differentiate his role as a leader from his role of a section employee, to remove himself occasionally from the actual operations of the group, and to spend his time planning the work, directing his employees, and performing specific, highly-skilled tasks. The less effective supervisor perceives himself less as a leader and more as a worker doing a job like the rest of the men in the section. At the same time, the effective supervisor appears to take a personalized approach to his employees, is concerned with problems of motivating them, and is sensitive to their needs. He is more "employee centered" than the less effective supervisor and tends to regard employees as "human beings" rather than as "people to get the work out."

A study of the use of participation in overcoming resistance to change was reported by Coch and French (1948). A job change was required in the method of inspecting, folding, and packing pajamas in a manufacturing plant. Three different degrees of participation were used for different work groups. In the "no-participation" approach, a meeting was held and management explained why the change was needed. In the "limited-participation" approach, the employees were represented by two employees who participated with management in planning the change and discussed developments with the rest of the group. In the "full-participation" approach, the employees were presented with an explanation of the need for change in the layout and they worked with the time-study man in planning the change. The "no-participation" group showed resistance from the outset; production dropped and never recovered to the old level. A number of workers quit their jobs, and there was much aggressive behavior and an accumulation of grievances against the new rate. The "full-participation" group did not show so marked a drop in productivity, showed a quick recovery, and attained higher productivity levels. The "limited-participation" group showed a marked drop and a slower recovery but eventually reached the output of the "full-participation" group.

Vroom (1959) found that the personality-characteristics of the members of the work group must be considered. He reports evidence that authoritarians (as measured by the F-scale) and persons with weak independence needs are unaffected by participation.

Shartle and his associates at Ohio State University studied the specific behaviors supervisors display. Through correlational analysis, it was discovered that there were two broad basic patterns which accounted for much of what the supervisors did (Gagne and Fleishman, 1959). They were labeled "consideration" and "initiating structure."

"Consideration" includes behavior indicating friendship, mutual trust, respect, and a certain warmth between the supervisor and his group.

"Initiating structure" includes behavior in which the leader organizes and defines the relationship between himself and members of the group. He defines the role he expects each member to assume, establishes channels of communication, and establishes ways of getting things done.

The behavior of group members was found to be related to the extent to which the supervisor emphasized "consideration" or "initiating structure." The authors point out that the "best" behavior pattern cannot be specified for all groups, for much depends upon the situation. However, it does appear that low degrees of "consideration" behavior combined with little "structure" behavior is the worst pattern. Similarly, there is evidence that emphasis on either of these patterns to the exclusion of the other is likely to be less effective. Another provocative finding was that the lower the level of the person in the company, the more he emphasized "consideration." The higher level he was, the more he emphasized "initiating structure." When supervisory personnel in a plant rated personnel on proficiency, the foremen rated highest by their own supervisors were those described by their own workers as low in "consideration" and high in "initiating structure."

Fiedler (1960) reports on another important group of studies relating the leader's psychological distance from his followers to his effectiveness as a leader. The measure of psychological distance is obtained by computing the differences in the leader's perception of the person he can work with best and the person with whom he has had the greatest difficulty. His most and least preferred co-workers may be individuals with whom he currently works, or they may be people he has known in the past. In a number of studies (basketball teams, surveying parties, Army tank crews, B-29 bomber crews, and consumer's cooperatives), it was found that psychologically distant leaders are more effective in promoting the productivity of task groups than are leaders with psychologically closer interpersonal relations. A contradictory finding was that while for the manager of a consumer cooperative psychological distance was associated with productivity, the reverse was true for the chairman of the board of directors of the cooperative. Producitivity was highest when the job was filled with a psychologically close person. This result has led Fiedler to suggest that different leadership behaviors are needed for different types of situations. In a personal letter to the author, Fiedler has summarized his conclusions:

> We have found that we can predict group performance on the basis of leader attitudes . . . provided we can adequately categorize the groups in terms of their favorableness for the leader. Most of our earlier studies, on basketball teams, surveying parties, military groups, as well as the management of farm supply organizations, were (a) groups in which the leader and the members got along well as indicated by the sociometric choices of the members of the leader-keyman relations; (b) a powerful formal position of the leader (especially in military crews and the corporations, though not basketball); and (c) a clearly structured task: everyone knew what to do, and how it is to be done.
>
> Under these conditions, a controlling, directive leader is able to coordinate the group members' tasks more effectively than would a permissive, non-directive, psychologically close person.
>
> Let us now consider the creativity situations, including the boards of directors. Here we are dealing with groups in which (a) the leader-group member relations were good (in specified cases); (b) the formal leadership position generally carried relatively little or no power; and (c) the task was highly unstructured. The leader knew no more or not much more than did his group members, and there was a multiplicity of paths which might lead to a good solution of the problem.
>
> Here the leader of a motivated group (which he would perceive as pleasant and free of strain) would only need to sit back and assist the other group member to derive solutions. In general, this is much like a brain storming session where even off-beat ideas may lead to a good solution. Hence, the permissive, non-directive leader, who will let his group explore various avenues and without becoming critical and controlling, will tend to get better solutions. The directive, controlling

person will be too impatient to get to the point that he will push his own ideas too hard, and he will be threatening to his group members who will then not leave themselves open by suggesting daring and original ideas.

It seems clear from the above studies that there is no "best" pattern of leadership. The effectiveness of particular supervisory behaviors depends on the personality of the leader, the personalities and expectations of the followers, the organizational climate within which the task is performed, and the requirements of the task.

Summary

The research literature of occupational and psychological variables potentially significant to a comprehensive and useful taxonomy of occupations has been reviewed in some detail. On the whole, the research has been scattered. Promising concepts have been sporadically explored, but the research has not been characterized by deep or repeated explorations, At the same time, evidence from this varied research shows two striking uniformities.

One recurrent theme is the frequently curvilinear relationship between personality and performance. Extreme scores on a particular personality measurement scale lie in the middle. This is probably because multiple factors are at work in most situations, and it is desirable to achieve an appropriate balance among them. For example, level of autonomic arousal seems directly related to the amount of energy available to physical activity, and inversely related to the capacity to delay and discriminate between alternatives. Most tasks require both capacities in different degrees. Either too high or too low a level of autonomic arousal is maladaptive, and the appropriate level for a particular task depends on the relative requirement of physical energy and discrimination between alternatives.

Research evidence also indicated that complex task performance relates to a number of interacting variables. It follows that prediction must be based on a consideration of the relevant variables and their interaction. For example, the relationship of abilities to performance varies depending on such moderator variables as anxiety, level of aspiration, relative strength of motive to achieve success or to avoid failure, etc. This finding suggests that for predicting performance, personality should be described as a pattern, an interaction of variables rather than a sum of specific variables.

Over the years, a great deal more effort has been expended attempting to differentiate between "normal" and "abnormal" behavior than between different modes of adaptation. This emphasis has limited the data from which specific conclusions can be drawn. There is, however, a modest literature reporting experiments directed to the relationships between personality and situational variables.

A finding which has been frequently replicated is the existence of a curvilinear relationship between measures of anxiety and task performance, with high anxiety facilitating simple task performance and low anxiety facilitating complex task performance. It was suggested that anxiety is correlated with autonomic arousal and that the latter is the basic variable.

Various leadership studies point to the conclusion that "authoritarian," "dogmatic," and "psychologically distant" leaders get better results when the situation calls for decisive and dependable action, at the cost of making the action less flexible and perhaps reducing the satisfactions of group members. "Participative" or "democratic" leaders get better results when the task calls for flexible action or the building of cohesive work groups.

A comparison of high-school students who scored high on creativity and academic achievement showed that creative performance occurs more frequently among students who are independent, intellectually expressive, asocial, and consciously original, and who have high aspirations for future achievement. Academic achievers are more likely to be students who are persevering, sociable, and whose parents hold somewhat authoritarian attitudes and values.

Studies using the Job Analysis and Interest Measurement showed that, for personnel officers, a high score on social service and approval from others correlated positively with performance, while for political and economic reporting officers there was a negative correlation. Among secretaries, identification with the boss was positively related to level of performance, but among code clerks there was no relationship between identification with the boss and performance.

CHAPTER IV

FACTOR ANALYSIS OF PERSONALITY AND INTEREST INVENTORIES

Another approach to identifying personality variables is to compare factor analyses made of the principal personality and interest inventories which have proved to be useful in research studies. First, we will consider together inventories which contain a high percentage of items describing various types of pathological attitudes, behaviors, or reactions which can be expected to make most of their discriminations between normal and abnormal behavior. Then we will compare inventories which have been developed to distinguish between various interests, needs, or performances. Such inventories can be expected to make their major discriminations between various types of adaptive behavior.

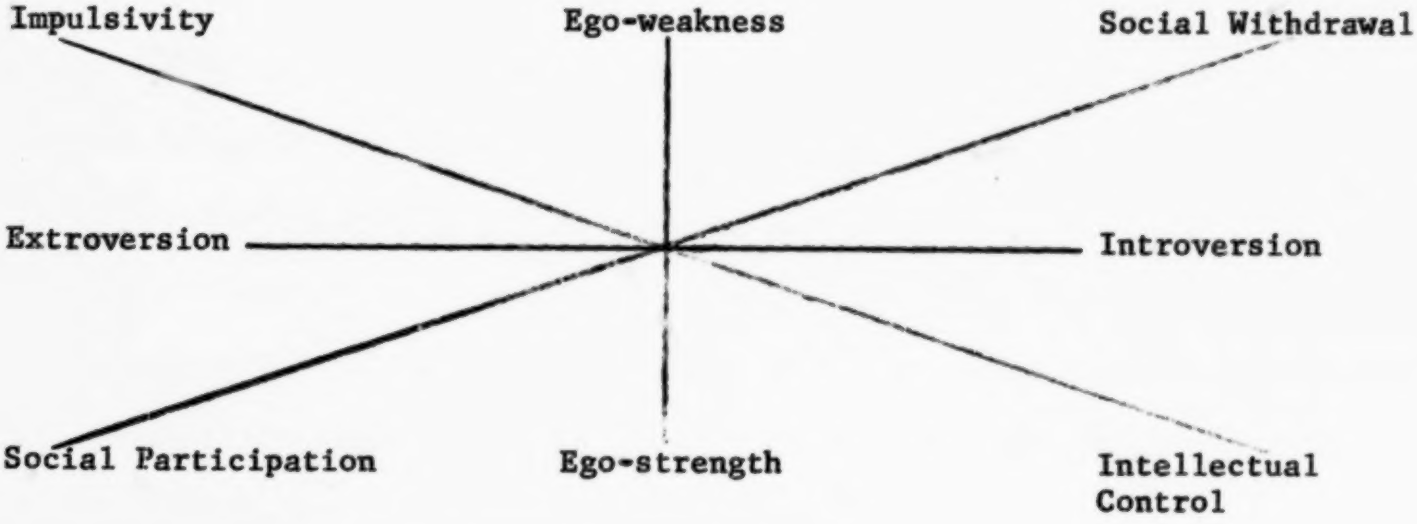
Pathology-Oriented Inventories

A number of studies of the MMPI show that most of the variance can be accounted for by two, or at most three, factors (Cottle, 1950; Gowan, 1958). Kassenbaum, Couch, and Slater (1959) factor-analyzed 32 scales from the MMPI and found two principal factors:

> Factor I--Ego weakness vs. Ego strength--Maladjustment, "general neuroticism," anxiety, dependency, and a tendency toward personality disorders as opposed to healthy non-anxious personality, absence of disorders, and a tendency toward leadership and intellectual ability.
>
> Factor II--Introversion vs. Extroversion--High "psychological inertia" or adhesiveness of libido as opposed to ease and lability of object cathexis. Cautious, controlled, inhibited, intellectual, skeptical, intrapunitive personality vs. adventurous, impulsive, expressive, gregarious, naive, extrapunitive personality.

These results are in line with Eysenck's conclusion that neuroticism and extroversion-introversion are two basic personality dimensions. Kassenbaum, Couch, and Slater point out that their factors combine in various ways to create fusion factors. For example, Ego-weakness plus Introversion equals Social Withdrawal.

The fusion factors are better descriptions of behavior than the original factors. The following chart shows what they think occurs:



They define the fusion factors as follows:

Fusion Factor A--Social Withdrawal vs. Social Participation--Shy, seclusive, submissive, guilty, depressed, masochistic personality vs. poised, sociable, dominant, confident, and spontaneous.

Fusion Factor B--Impulsive vs. Intellectual Control--Impulsive, manic, excitable, erratic, uncontrolled, delinquent personality as opposed to responsible, controlled, intellectual, original intraceptive, insightful personality.

Studies of the 16 P.F. Questionnaire (Becker, 1961; Karson and Pool, 1958) and the Guilford-Zimmerman Temperament Survey (Cook *et al*., 1961; Krieg and Moyer, 1961) show that most of the variance in both of these inventories can be accounted for by the two factors reported above or by fusion factors. In addition, there was evidence from the 16 P.F. Questionnaire of "Super-ego Strength vs. Lack of Internal Standards" and "Emotional Sensitivity vs. Tough Maturity" factors; and the results from the Guilford-Zimmerman Temperament Survey provided support from dividing "Extroversion-Introversion" into "Social Introversion" and "Thinking Introversion" plus a new factor which might be called "Interpersonal Leadership."

Differential Adaptation Oriented Inventories

The Strong Vocational Interest Blank, while it has proved to be very useful for vocational counseling, is not based on any personality theory and therefore does not provide significant insights regarding psychological variables. The Edwards Personal Preference Schedule (EPPS) was developed entirely on the basis of a theory of needs, and its items had no empirical referents except with respect to social desirability. It is not surprising, therefore, that Levonian et al. (1959) found a large discrepancy between what the EPPS was designed to measure and the actual item factorial content. Instead of finding large factors which are readily identifiable along the lines of the major variables scored in the test, they found a large number of narrow factors, the majority of which seemed to be based upon shared common statements. Clear-cut factors did not emerge. In studies by Krug and Moyen (1961), Cook et al. (1961), and Hartley and Allen (1962), however, two new factors appeared which might be called "Conformity to Authority vs. Autonomy" and "Social Service vs. Personal Achievement." In addition, the "Interpersonal Leadership" and "Social Introversion" factors mentioned above seemed to be confirmed.

The Kuder Preference Record (Vocational) was analyzed by Cottle (1950) and Sternberg (1955), and they found the first factor to emerge was one which might be called "Verbal vs. Mathematical Communications." They also found one that might be called "Interest in Routine Work" and another one which seemed to be a confirmation of the "Interpersonal Leadership" factor.

The California Personality Inventory (CPI) is the inventory which probably has been most successful in predicting social and personal criteria. Liddle (1958) states that in almost every instance there are statistically significant relationships between the CPI and its subsections and such measures as socio-economic status, intelligence, and leadership ability. Further, the self-reports of adolescents on the CPI correlate with rating of their psychological adjustment as seen by their teachers and peers. A number of factor analyses of the CPI show reasonably similar results (Denton et al., 1962; Nichols and Schnell, 1963; Crites et al., 1961; G.H. Shure, 1963; J. Pierce-Jones, et al., 1962). Two very large factors are consistently identified in all these studies.

> Factor I--Sense of well-being, self control, tolerance, good impression, and achievement via conformance.
>
> Factor II--Dominance, capacity for status, sociability, social presence, and self-acceptance.

Crites (1961) suggests that these two factors measure markedly different modes of adjustment or ways of coping with the environment and with other people. Factor II reflects an inclination to master and control people and things and a tendency to direct and manipulate affairs; adjustment comes from the changes in external reality rather than in the self. In contrast, Factor I defines an attitude of compliance, cooperation and conformity; and adjustment results from adaptation of the self to reality. Factor I seems to be similar to MMPI Fusion Factor A, and Factor II appears to be equivalent to the "Interpersonal Leadership" factor found in other studies. In addition, an "Achievement via Independence" factor seems to be similar to the "Conformity vs. Autonomy" factor discussed earlier, and a "Super-ego Strength" factor seems similar to the "Super-ego Strength vs. Internal Standards." A "Femininity" factor may also be related to the earlier factor "Emotional Sensitivity vs. Tough Maturity."

The Job Analysis and Interest Measurement (JAIM) has been developed almost exclusively for job and occupation criteria. Three factor analyses (Walther, 1964) have found the same five factors in each study:

> Factor I--Conformity to Authority--Scales with a high positive loading are Accepts Commands, Accepts Routines, Authority Identification, and Moral Absolutes. Scales with a high negative loading are Question Authority, Independence, Problem Analysis, and Resourceful Accomplishment.
>
> Factor II--Interpersonal Leadership--Scales with a high positive loading are Persuasive Leadership, Executive Action Leadership, Self Confidence, Empirical-Intuitive and Activity-Frequent Change. Scales with high negative loadings are Move Away and Systematic-Methodical.
>
> Factor III--Autocratic Leadership--Scales with a high positive loading were Directive Leadership and Punishment. Participative Leadership had a high negative loading.

Factor IV--Intrinsic vs. Extrinsic Rewards--The scale with the highest positive loading was Knowledge of Results, and the one with the highest negative loading was Rewards.

Factor V--Reaction to Aggression--The scale with the highest positive loading was Move Against, and the scales with the highest negative loadings were Move Toward and Move Away.

Two of these factors (Conformity to Authority, and Interpersonal Leadership) appear to be similar to the factors reported earlier. In addition, in the one study using the MMPI as well as the JAIM, the familiar Neuroticism factor was identified. The three additional factors seem to be related to leadership styles and methods for dealing with aggressive behavior from others.

Another JAIM factor was found in two of the studies:

Factor VI--Social Service vs. Personal Achievement--Scales with high positive loadings were Social Service, Approval from Others, and Move Toward. Scales with high negative loadings were Formal Status, Resourceful Accomplishment, and Self Assertiveness.

This factor is very similar to the "Social Service vs. Personal Achievement" factor found in the studies of the Kuder Preference Schedule. Other interpretable factors which have only been identified in one study are:

Factor VII--Mechanical Interests--Scales with high positive loadings are Mechanical Interests, Delegative Leadership, and Self Assertiveness.

Factor VIII--Academic Ability--Scales with high positive loadings are the General Ability, General Background, and English Expression Sub-tests of the Foreign Service Officer Examination and the JAIM Academic Data scale.

Factor IX--Inner Directed--Scales with high positive loadings are Persistence, Internal Standards, and Self Directed.

Summary

In the various analyses which have been made of interest and personality inventories, the following factors have been found in a number of different studies:

a. Social Participation vs. Social Withdrawal

b. Impulsivity vs. Intellectual Control

c. Interpersonal Leadership

d. Conformity to Authority vs. Autonomy

e. Social Service vs. Personal Achievement

The following additional factors have been found in one or two studies:

f. Super-ego Strength vs. Lack of Internal Standards

g. Emotional Sensitivity vs. Tough Maturity

h. Verbal vs. Mathematical Communications

i. Interest in Routine Work

j. Autocratic Leadership

k. Intrinsic vs. Extrinsic Rewards

l. Reaction to Aggression

m. Mechanical Interests

n. Academic Ability

o. Inner-Directed

These factors will be used as one of the elements guiding the development of a proposed Taxonomy of Occupations.

CHAPTER V

MODELS FOR THE CLASSIFICATION OF OCCUPATIONS

Psychological research on occupations has quite naturally led to attempts to classify occupations in terms of psychologically meaningful dimensions. One of the major contributions to the organization and systematization of occupational information was the preparation of the Dictionary of Occupational Titles (DOT) by the U.S. Employment Service. Volume I defines each of about 22,000 job titles in terms of the duties performed. The original DOT classification, while representing a significant achievement in its comprehensiveness and general applicability, had many drawbacks. One of its principal weaknesses stems from the mixture of different dimensions or principles of classification.

In an attempt to integrate job classifications more closely with work requirements, psychologists have for some time been exploring the traits pattern demanded by different jobs. Several plans have been developed for organizing occupations in accordance with aptitude requirements. The Minnesota Occupational Rating Scales (MORS) was used to rate 432 occupations for the amount of each of seven abilities which it requires (Paterson, Gerken, and Hahn, 1953). Another approach was to use the General Aptitude Test Battery to establish Occupational Ability Patterns. (Guide to the Use of the General Aptitude Test Battery, 1962).

The above efforts were limited to the traits measured by aptitude tests. Analyses of the occupational keys of the Strong Vocational Interest Blank and the Kuder Preference Record have led to occupational groupingswhich include more variables than just aptitudes.

Analyses of Strong Vocational Interest Blank

Strong (1943) reports on seven factor analyses which have been made of the

SVIB for men with differing numbers of keys and differing samples of subjects in them but with a fair amount of stability of the general factors isolated. He prefers to group the occupational scoring keys by their level of intercorrelations in such a way as "to obtain the maximum average correlation between members of a group and the maximum average correlation with all other groups." On this basis, 11 groupings emerge from an analyses of 36 occupational keys:

I. Artist, psychologist, architect, physician, dentist
II. Mathematician, physicist, engineer, chemist
III. Production manager
IV. Aviator, farmer, carpenter, mathematics, physical science teacher, printer, policeman, forest service man
V. YMCA secretary, YMCA physical director, personnel manager, city school superintendent, minister, social science teacher
VI. Musician
VII. Certified public accountant
VIII. Purchasing agent, office worker, accountant, banker
IX. Real-estate salesman, life-insurance salesman, sales manager
X. Lawyer, author-journalist, advertising man
XI. President of a manufacturing firm

Analysis of the Kuder Preference Record (Occupational)

Schultz and Baker (1962) have factor-analyzed the occupational scales of the Kuder Preference Record (occupational) with the following results:

I. Personnel manager, high school counselor, YMCA secretary, psychologist, pharmaceutical salesman, school superintendent, radio station manager, minister, lawyer, psychiatrist
II. Engineer, meteorologist, chemist, high-school mathematics teacher
III. Bank cashier, retail clothier, accountant, insurance agent

IV. Interior decorator, architect

V. Journalist, newspaper editor, librarian, lawyer

VI. County agricultural agent, forester

VII. Dentist, physician, high-school science teacher, X-ray technician, druggist, veterinarian, chemist, professor of psychology

The Kuder Group I and the Strong Group V are almost the same, and the common element appears to be an interest in other people. Both group II's are equivalent in that both appear to contain an interest in the physical sciences. Kuder Group III and Strong Group VII seem to have the common element of work which is carried out according to set procedures and sequences. Kuder Group V and Strong X both seem to contain a verbal or linguistic element. Kuder Group VI overlaps somewhat, but not entirely, with Strong Group IV in the outdoor activity element. Strong Group I overlaps with Kuder Group VII to the extent that there is an interest in the biological sciences and with Kuder Group IV to the extent that there is an interest in the practical application of art.

There are definite limits to the usefulness of using occupational titles as the unit of analysis. Anastasi (1964) has pointed out that the breadth and flexibility of most occupations are such that different persons may succeed in them for different reasons. The job may be structured by the individual to fit his own aptitude and personality pattern, and the same job in different companies or under different supervisors may call for very different personality traits. Therefore, it is desirable to classify jobs on the basis of psychological dimensions rather than job titles.

Classification Systems Proposed by Roe and Super

Several substitute classification systems have been proposed for use in counseling and research in which attempts are made to separate the dimensions of the DOT classification. Roe (1956) proposes that occupations be divided into the following eight groups:

Group I--Service

Personal interaction and a dominant interest of a succorant and nurturant nature

Group II--Business Contact

Dominant interest in interpersonal relations, but exploitative rather than nurturant

High in dominance scores on tests, and high Kuder Persuasive scores are particularly characteristic

Group III--Organization

Economic value given high importance

Includes many persons without marked personality deviations

Group IV--Technology

Interest in personal interaction is generally low

Qualitative and spatial rather than verbal intellectual interests

Object-orientation of interests

Group V--Outdoors

Information about this group scanty

Tend to come from family backgrounds of the same sort

Group VI--Science

Strong intellectual interests and abilities

Patterning of verbal and non-verbal interests varies somewhat with the field of science

Group VII--General Culture

Most verbally-oriented group

Group VIII--Arts and Entertainment

Special artistic and perhaps special physical abilities play an important role

In addition to these groupings, she proposes that jobs be classified according to level. Super (1957) has proposed a somewhat parallel integration of interest factors which also consists of eight groups:

I. Scientific

An interest in knowing the why and how of things, particularly in the natural sciences

II. Social Welfare

An interest in people for their own sake

III. Literary

An interest in the use of words and in the manipulation of verbal concepts

IV. Material or Concrete

Interest in working with tangibles

V. Systematic (Record keeping)

CPA factor and Kuder computational

VI. Contact

Interest in dealing with people for some personal gain

VII. Aesthetic Expression

VIII. Aesthetic Appreciation

Roe (1956) summarizes her discussion by stating that we do not have occupational data based upon an adequate theory of the nature and development of personality, but that we do have strong indications that occupational preferences and performance are closely related to different aspects of personality. The lack of a theory which integrates the categories of the Roe and Super systems obviously seriously reduces their usefulness.

U.S.E.S. Functional Classification Project

An application by the U.S.E.S. of a functional classification plan, which includes interest and temperament factors, to all DOT jobs is the most ambitious vocational classification project yet undertaken.

An interest was defined as a preference for certain types of work accompanied by dislike or rejection of contrary types of work. The specific categories within this component were based on the work of Cottle (1950) who factor-analyzed the Strong Vocational Interest Blank and Kuder Preference Record. The five interest factors are:

--Situations involving a preference for activities dealing with Things and Objects vs. Situations involving a preference for activities concerned with People and The Communication of Ideas

--Situations involving a preference for activities involving Business Contact with People vs. Situations involving a preference for activities of a Scientific or Technical nature

--Situations involving a preference for activities of a Routine, Concrete, Organized nature vs. Situations involving a preference for activities of an Abstract or Creative nature

--Situations involving a preference for Working for People for their presumed good as in the Social Welfare sense, or for dealing with People and Language in Social Situations vs. Situations involving a preference for activities that are Non-Social in nature and carried on in relation to Processess, Machines, and Techniques

--Situations involving a preference for activities resulting in Prestige or Esteem of Others vs. Situations involving a preference for activities resulting in Tangible, Productive Satisfaction

Temperaments were defined as those personality qualities which remain fairly constant and reveal a person's intrinsic nature. The estimate of the temperament requirements was made by reviewing job definitions and judging the situations in jobs that consistently suggested certain temperament trait requirements. The 12 temperament factors are:

--Situations involving a variety of duties often characterized by frequent change

--Situations involving repetitive or short-cycle operations carried out according to set procedures or sequences

--Situations involving doing things only under specific instructions, allowing little or no room for independent action or judgment in working out problems

--Situations involving the direction, control, and planning of an entire activity or the activity of others

--Situations involving the necessity of dealing with people in actual job duties beyond giving and receiving instructions

--Situations involving working alone and apart in physical isolation from others, although activity may be integrated with that of others

--Situations involving influencing people in their opinions, attitudes, or judgments about ideas or things

--Situations involving performing adequately under stress when confronted with the critical or unexpected or taking risk

--Situations involving the evaluation (arriving at generalizations, judgments, or decisions) of information against sensory or judgmental criteria

--Situations involving the evaluation (arriving at generalizations, judgments, or decisions) of information against measurable or verifiable criteria

--Situations involving the interpretation of feelings, ideas, or facts in terms of personal viewpoint

--Situations involving the precise attainment of set limits, tolerances, or standards

Added to these components is a concept of a job worker situation (a structure of worker functions) which is defined as an interaction between what gets done on a job (worker fields), what the worker does (worker functions), and the materials, products, subject matter, and services used on the job. A basic assumption is that the worker functions in relation to things, data, and people, and that it is possible to express each of these functions in terms of a hierarchy with successive functions in the hierarchy, including all those that preceded and excluding all those that follow.

There can be no question but that the U.S.E.S. functional classification project has made a substantial contribution to occupational analysis by emphasizing through its temperament and interest components new dimensions of the world of work. However, it is limited by the lack of an integrating theory relating the various components to each other and by its focus on what gets done in the job. In a previous article, the author (Walther, 1960) made the following observations:

> But viewing a job as a behavior situation is not enough. A job also operates within a social and psychological environment. Every

> job is part of a broader structure of work and has meaning to other people. It may have high status, low status, or impose different types of expectations on the individuals who occupy it with respect to their off-hours activities and behavior. They may be expected to live in a certain part of the city, have a certain type of car, wear certain types of clothes, participate in social and community affairs in a certain way, etc.
>
> Every job also has a private meaning to the individual filling it. The private meaning though profoundly affected by the public meaning is also quite different from it. The job may mean a chance to serve during war, a chance to help other people with their problems, an opportunity to break into a career, having the kind of leisure-time life the person enjoys, and it always means a pay check. These private meanings profoundly affect how the individual responds to the job.
>
> While the social and private meanings of jobs are so many, or complex, and so variable that it may be impossible or at least unprofitable to identify them all, still the recruiter or counselor who ignores them puts serious limits on the effectiveness of his work. An adequate system of analyzing the work situation should attempt to identify those meanings which commonly have an important effect on work performance.

In summary, we have found the classifications of occupations based on required aptitudes has limited usefulness. Aptitudes are a necessary, but not sufficient, determinant of job performances. If a person does not have the aptitude, he will not be able to do the job; but possessing the required aptitude is no assurance that he will perform the job adequately or that he will like the work. The use of job titles permits more variables to be considered, but these variables are measured very inefficiently by job titles. Focusing on what gets done in the job permits much more accurate measurement than use of job titles, but still does not permit consideration to be given to the meaning that the job has to the individual. Finally, each of these measurement approaches is seriously limited by the absence of adequate theory relating personality to occupational preference and performance.

CHAPTER VI

A PROPOSED TAXONOMY OF OCCUPATIONS

A proper classification of occupations is based on patterns of personality integration related to performance and occupational satisfaction, rather than on job titles and work content. Research evidence all points to the difficulty of relating the latter to significant variables. It is perfectly possible for a single occupation to encompass a number of personality patterns. Gibson (1961) suggests that many types of minds are needed to conduct scientific research. Thus the occupation "research chemist" will include people with significantly different types of personality organization. The profession of lawyer probably includes as a minimum trial lawyers, research lawyers, and corporation lawyers, each of which requires different personality patterns for most effective performance. Kelly and Goldberg (1959) have shown significant differences within the profession of psychologist between therapists, academicians, and administrators. Anastasi (1964) has suggested that even a simple job can often be structured by the individual to fit his own aptitude and personality pattern. For all these reasons, jobs should be analyzed in terms of their satisfaction potential and the range of behaviors which may lead to success in them and the personality patterns which are related to these behaviors and satisfaction potential.

The most useful way to subdivide personality variables for occupational-analysis purposes is into behavioral styles, work preferences, and values. Behavioral styles are the consistent ways in which individuals organize and direct their mental, physical, and energy resources to accomplish goals. Work preferences are the anticipation of intrinsic satisfaction from the performance of certain types of tasks. Values are the criteria against which the individual judges the "goodness" or "badness" of the work. Different jobs establish different behavioral requirements and different opportunities for personal satisfaction and feelings of value. Individuals differ in their behavioral styles, work preferences, and criteria for the judgment of success. It is the degree of match between the job and the individual in these dimensions which crucially influence how well he will perform on the job. The individual who is able to do work which he does well, which he enjoys, and which gives him a feeling of value is fortunate indeed. His performance is almost certain to be outstanding. Most of us are not this fortunate. The things we are good at are often not things we like to do, and the activities we enjoy may appear to us to be illegal, immoral, or fattening. The goal for all of us is to get the best balance between behavioral styles, satisfactions, and values.

Through factor analysis of the JAIM, certain behavioral styles, work preferences, and value dimensions have been identified. These will be discussed and related to factor analyses of other self-report inventories and to various models for classifying occupations. The names of the JAIM scales are listed in parenthesis following statements describing the variable being measured by the scale.

Behavioral Styles

Each of us functions in a complex world, with limited perceptual and memory capabilities; yet there is an almost limitless amount of information which could be noticed, and an almost infinite number of decisions to be made and physical actions to be completed for the individual to get along in the world. Through conscious effort, man has the capacity to deal with only about seven pieces of information at one time. Thus, almost all determinations of what to notice, what it means, what to do about it, and the actual physical manipulation of both his internal and external environment have to be performed automatically through complex patterns of behavior which are available to the individual with a minimum of conscious effort.

The nature of this organization gives rise to characteristic types of performance, conscious and unconscious, in various life situations. Behavioral styles are determined, in part, by the innate characteristics of the individual; his experience with what works, and what does not work for him; and the social values and standards to which he has been exposed. Behavioral styles are very difficult to change because their elements work together as part of a functioning system. Experience sometimes results in slow change, but planned change requires the use of a good deal of conscious effort, frequently more than the individual is able or willing to spare.

It is impossible for the individual to have behavioral styles which enable him to be effective equally in all types of situations. Behavioral organizations which lead to efficient performance in one type of situation may lead to inefficient performance in other situations. For example, focusing attention on one aspect of the environment leads to ignoring other aspects; placing a high value on one type of outcome leads to diminishing the value of other outcomes; and developing habitual responses of one type will make other types of responses more difficult. The first behavioral style to be discussed will be Relationship to Authority.

A. Relationship to Authority

In every job, power is exerted on the employee as a legitimate exercise of authority to get him to behave in certain ways needed to get the job done. This power may be imposed through bosses, regulations, procedures, standards, etc. The way in which this power is imposed varies, depending on whether reliable or innovative behavior is desired. In some jobs, it is important that specific orders be carried out, or that procedures be followed (Accept Commands and Accept Routines). In other jobs, the individual needs to bring to the job moral values which will guide his behavior (Moral Absolutes). In still other jobs, the employee should be sensitive to non-verbal as well as verbal cues, be able to identify with the boss, and to anticipate what he wants (Authority-Identification). These are alternative ways of complying with authority, depending on whether the employee is expected to respond primarily to the commands, the moral standards, or the wishes of persons in authority. Still other jobs require that the employee be capable of going ahead on his own initiative (Independence), or that he be capable of challenging or questioning authority (Question Authority).

In a number of studies, it has been found that occupational groups differ significantly in their approach to authority. Code clerks, nurses, and policemen accept routines. They follow instructions carefully but do not particularly identify with or try to please their bosses. Secretaries, on the other hand, do identify with their bosses. Their personal radars are sufficiently sensitive that they typically know what the boss wants done without being told. These different styles for relating to authority are clearly required by the nature of the jobs. The function of a secretary is to help her boss get his work done, and her success will be determined to a large degree by the extent to which she does what he really wants done. A boss may dictate a letter in anger to his secretary and she may wait until after he has cooled off, knowing that he really does not want to send it. The code clerk, the policeman, and the nurse are expected to follow exact routines and their sensitivity to the wishes as compared to the commands of the boss is not nearly so important as it is for a secretary.

Foreign Service officers and social workers tend to be more independent and capable of going ahead on their own. It is hypothesized that accountants would tend to be guided by internal standards which they bring to the job, and that research scientists would have a tendency to challenge or question authority.

The factor found in studies of other inventories closest to Relationship to Authority is the "Conformity to Authority vs. Autonomy" factor, which has been identified in several studies of the Edwards Personal Preference Schedule and the

California Psychological Inventory. The following temperament elements in the U.S.E.S. Functional Classification Project appear to be related:

- --Situations involving repetitive or short-cycle operations carried out according to set procedures or sequences
- --Situations involving doing things only under specific instructions, allowing little or no room for independent action or judgment in working out problems
- --Situations involving the precise attainment of set limits, tolerances, or standards

B. Interpersonal Influence

Situations vary with respect to the requirement for relating to other people. Some situations call for a good deal of personal leadership or persuasiveness (Persuasive Leadership). Other situations call for behavior which is supportive and understanding of other people, and which helps maintain harmonious social relations. Still other situations require the individual to be assertive in the pursuit of his own goals when they are in conflict with the goals of others (Self-Assertiveness). Finally, there are situations in which there is only a minimal need for personally influencing the behavior of others. Ministers, Foreign Service officers, and management interns were found to be high on persuasive leadership. Personnel officers and social workers tended to be supportive and understanding of other people. Business executives and security officers tended to be self-assertive, and code clerks and fiscal officers tended to exert little influence on other people.

In addition to the JAIM, this factor has been identified through studies of the Guilford-Zimmerman Temperament Survey, the Edwards Personal Preference Schedule, the Kuder Preference Record (Vocational), and the California Psychological Inventory. Roe's and Super's categories called "Business Contact" and "Contact" seem to be included within this factor. The following U.S.E.S. temperament element also seems to be related:

- --Situations involving the necessity of dealing with people in actual job duties beyond giving and receiving instructions

C. Leadership-Decision Styles

Authority in a formal organization can be exercised in a directive, participative, or delegative manner. The boss can make all the decisions himself (Directive Leadership), he can share decision-making with his subordinates (Participative Leadership), or he can delegate to his subordinates (Delegative Leadership). Each of these strategies is appropriate to different types of situations, depending on whether maximum decisiveness or maximum resourcefulness is desired. A directive style is most effective when there is adequate commitment by subordinates to the task, goals are specific, conflicts of interest among units within the organization can be disregarded because of the strength of command from the top; and it is thus possible to create a mechanical linkage between the various levels of command, resulting in the greatest efficiency in translating an order into action. The delegative style may be most effective when the goals and methods are ambiguous and it is desirable to tap the resourceful capabilities of all the members of the organization. The participative style is a combination of these two styles, gaining through greater commitment and utilization of the intelligence of subordinates and also the coordination of conflicting interests what it loses in efficiency in action.

This factor did not emerge in any of the studies of personality or interest inventories. The following U.S.E.S. temperament element seems to be related:

--Situations involving the direction, control, and planning of an entire activity or the activities of others

D. Motivational Strategies

Supervisors in formal organizations have alternate strategies available to them for motivating the behavior of subordinates. They can reward them, punish them, or feed back knowledge of results. In each of the three factor analyses of the JAIM, it was found that the Punishment Scale was highly correlated with the Directive Leadership Scale, but not correlated with either the Rewards or the

Knowledge of Results Scales; and these latter two were found to be opposite poles of a unique factor. Juvenile-court judges were found to be high on the Rewards Scale, policemen were high on the Punishment Scale, and social workers high on the Knowledge of Results Scale.

It is suggested that both rewards and punishment are efforts to control the other person by changing the payoff, while the feedback of results helps the individual to develop himself by giving him information about the consequences of his action. There is not sufficient experimental or survey data to indicate the types of job situations in which these different motivational strategies will be most and least effective. It is also not clear how stable this factor is and how easily the behavior can be changed by instructions or training. Nothing similar to this factor was identified in the analyses of other inventories.

E. Reaction to Aggression

When discussing the Response to Authority factor, it was pointed out that, in every job, pressure is exerted on the employee to influence his behavior. This pressure may come from a variety of sources such as bosses, associates, customers, collaborators, competitors, etc. Sometimes the employee considers the effort to be legitimate and the demands to be proper. At other times he considers the effort to be illegitimate, and the pressure to be improper and unduly aggressive. Different jobs have different requirements for dealing with aggressive behavior from others. Some jobs require that the employee be capable of standing firmly against the aggressor as in the case of the policeman. The motorist who gets out of line during a traffic jam has to be forced back into line. Other jobs require that the employee be capable of smoothing down ruffled feathers, as in the case of the hostess in the restaurant. When a drunk comes into the restaurant, the hostess has to be able to deal diplomatically with him and his friends as well as to protect the interests of other customers. It seems clear that switching these two responses can lead to disaster. The policeman who usually placates or the hostess who usually stands firmly is almost certain to get into difficulties. Likewise, the person who retreats into his shell under attack will do poorly as either a policeman or a hostess. On the other hand, there are jobs like a bookkeeper or telegrapher that for the most part permit the individual to avoid aggressive behavior from others.

Horney (1950) has reported that she usually found one of three neurotic trends in her patients: that they tended to "move toward," "move away," or "move against" other people. "Move toward" means to try to win over or appease other people; "move away" means to withdraw from other people either physically or psychologically; "move against" means to try to defeat or overwhelm other people. What Horney calls trends can also be called strategies, and probably one test of adjustment is having the capacity to use any of the three strategies when appropriate. Sometimes we should be able to withdraw from situations without feeling inadequate or cowardly. When we are sitting at a bar, and the stranger sitting on the next stool decides he wants to rearrange our facial geography, we should be able to disengage ourself quickly and not give it another thought. Sometimes we need to stand firmly. When someone starts imposing on us and violating our rights, we should be able to stop him. At other times we need to accomodate ourselves or "pour oil on troubled waters." As Horney has pointed out, being able to use only one of these strategies leads to severe difficulties. Few of us, however, are equally adept at each of these strategies, and usually prefer and have more skill in the use of one of them. The more specialized we are, the more important it is that we seek work which makes use of our capabilities and does not exploit our weaknesses. Few of us could duplicate the performance of the top sergeant in whipping the raw recruits into shape. At the same time, we can expect that the qualities which make him a success with the troops would seriously interfere with his ability to be a successful labor negotiator.

The factors developed from studies of other inventories which are closest to this are the "Emotional Sensitivity vs. Tough Maturity" factor which emerged from the 16 P.F. Questionnaire and the "Femininity" factor from the California Psychological Inventory.

F. Information-Processing Behavior

Even though the hypothesized factors relating to information-processing behavior did not emerge from factor analyses of the JAIM, it is still believed that this is an important factor. Possibly this factor was not found because the populations used for the studies were too homogeneous with respect to this variable. Evidence for this assumption is the finding that the Systematic-Methodical and Empirical-Intuitive scales distinguished sharply between engineers, physicists, and fiscal officers on one hand and Foreign Service officers and personnel officers on the other. A similar factor, Verbal vs. Mathematical Communication, was found in the studies of the Kuder Preference Record (Vocational).

Jobs differ in the manner in which information must be processed and decisions made. Sometimes rapid decisions are required involving only partially explicit considerations. In this case, an impressionistic, intuitive approach is most effective (Empirical-Intuitive). An example might be immediate interpersonal relations. When dealing with other people, time is important. A delayed response is often no response at all because the situation has changed and the opportunity to react has gone. Perhaps to the extent that success in an executive job depends upon effective interaction with other people, the executive needs to be capable of responding quickly; and, therefore, he must have the capacity to make quick intuitive decisions. In other jobs, the emphasis is on accuracy rather than speed; and the considerations can be made explicit. In this case, a rational, logical approach, depending on a formal deliberate methodology, is most effective (Systematic-Methodical). This is the method which must be used by engineers and research scientists. Three U.S.E.S. temperament elements seem to be related:

--Situations involving the evaluation (arriving at generalizations, judgments, or decisions) of information against sensory or judgmental criteria

- --Situations involving the evaluation (arriving at generalizations, judgments, or decisions) of information against measurable or verifiable criteria

- --Situations involving the interpretation of feelings, ideas, or facts in terms of personal viewpoint

G. Impulse Control

Every individual in developing his personal adjustment to his life situation must to some degree control his impulses. Through the development of a conscience, he restrains some of his personal satisfactions in the interests of group cooperation (Internal Standards). An individual also sometimes needs to defer immediate gratifications of desires and work for greater long-range satisfactions (Persistence). Further, he needs to have the capacity to organize and direct his energies toward future goals established both by society and by himself (Self-Directive). The studies of the JAIM found an "Inner-Directed" factor which appears to be measuring this element, as does the "Super-ego" Strength vs. Lack of Internal Standards," which emerged from studies of the 16 P.F. Questionnaire. Sufficient research data is not currently available to demonstrate the differential effects of these variables on various types of performances.

H. Energy Availability

Jobs vary with respect to the amount of energy which the worker is required to spend, and individuals vary in the amount of energy they have available for use. Availability of energy is both a matter of autonomic sensitivity and the specific mechanisms for defense against excessive arousal used by the individual and the circumstances which trigger them. This is the familiar neuroticism factor reported in many studies, except that here the focus is on adaptive rather than non-adaptive behavior. It was not found in studies of the JAIM. The relationship with performance has already been discussed in Chapter III. The following U.S.E.S. temperament element seems to be related:

- --Situations involving performing adequately under stress when confronted with the critical or unexpected or taking risks

Work Preferences

It is important that a clear conceptual distinction be made between work preferences and values. Work preferences are the anticipation of intrinsic satisfaction from the performance of certain types of tasks. Values are the criteria against which the individual judges the "goodness" or "badness" of the work. In Freudian theory, values are the ego-ideal portion of the super-ego. Another way of stating it is that values are an essential ingredient of a person's self-concept. Thus, clerical work in a hospital has quite a different meaning to individuals who value social service than does clerical work in an insurance company. Their satisfaction comes from the "goodness" of the work rather than from the fun contained in the task itself.

A data-people-things trichotomy has been found in a number of studies. Some individuals are more interested in work containing an intellectual challenge (Problem Analyses); other individuals are more interested in working with other people (Social Interaction), and still other individuals prefer to work with tools (Mechanical Interests). Individuals all appear to differ in the amount of environmental stimulation they require, without which boredom influences their satisfaction and perhaps also their performance (Activity-Frequent change), and the degreee to which they like to work as a member of a group or to work on their own (Group Identification).

Secretaries and personnel officers scored high on social interaction. Management interns, Foreign Service officers, and economic specialists scored high on problem analysis. Engineers scored high on mechanical interest, while security officers scored high on Activity-Frequent change; and personnel officers scored high on group identification.

Values

In making his adaptation to society, each individual needs to establish a compromise between individual and group interests. Different balances are established by different societies and by different individuals. There are, however, certain general requirements which all societies impose to some degree on all individuals. A political society must demand of its membership loyalty, industry, maintenance of standards, concern for others, resourcefulness, and appropiate leadership actions. The importance put on these various elements depends on the society. Some emphasize loyalty and minimize the others. Others put greater emphasis on resourcefulness. In the complex American society, there are subcultural groupings within the larger society and thus a considerable degree of individual differences in values can be found.

Values related to concern for others can be divided into concern for the approval of other people (Approval From Others) and concern for helping other people through social betterment (Social Service). The first one is similar to Riesman's (1950) "Other-directed" character type. The second one is the traditional social-service orientation. Concern for personal achievement can be related to the formal recognition of leadership position (Formal Status) or with intellectual achievement (Resourceful Accomplishment). Emphasis on loyalty and industriousness results in an evaluation of oneself by the degree to which one conforms to his specific role requirement (Role Conformity). Emphasis on the maintenance of standards is another way through which an individual can value himself (Maintain Standards).

Personnel officers scored high on approval from others, and physical therapists scored high on social service. Business executives scored high on formal status, and economic analysts scored highest on resourceful accomplishment. No data is available for "Maintain Standards" and "Role Conformity" scales.

CHAPTER VII

EXPERIMENTAL APPLICATION OF THE TAXONOMY TO THREE OCCUPATIONS

In order to test the validity of the taxonomy with respect to the dimensions measured by the JAIM, predictions were made of the behavioral styles, work preferences, and values of members of three occupations: policemen, social workers, and juvenile court judges; and the JAIM was administered to the following samples from these occupations:

--Twenty-seven policemen assigned to patrol duty within a metropolitan police system

--Twenty-seven social workers in public-welfare settings attending a training program dealing with juvenile-court issues

--Twenty-four juvenile-court judges attending a training program dealing with juvenile-court issues

The predictions for each occupation were:

Policemen

--High on the Accept Commands and Accept Routines and low on the Independence and Question Authority scales

--High on the Move Against and Self-Assertiveness scale

--High on the Punishment scale

--High on the Directive Leadership and low on the Participative Leadership scale

--High on the Mechanical Interest scale

--High on the Role Conformity scale

Social Workers

--High on the Independence and low on the Accept Commands and Accept Routines scales

--High on the Move Toward and low on the Move Against scales

--Low on the Punishment scale

--High on the Participative Leadership and low on the Directive Leadership scales

--High on the Empirical-Intuitive scale

--High on the Social Interaction scale

--High on the Social Service and low on the Formal Status and Role Conformity scales

Juvenile-Court Judges

--High on the Persuasive Leadership scale

--High on the Move Toward and low on the Move Away and Move Against scales

--High on the Social Service scale and low on the Role Conformity scale

For the most part, the predictions for policemen were confirmed, although more differences were found than were predicted. They were found to be high on the Accept Routines, Mechanical Interests, Role Conformity, Accept Commands, Directive Leadership, Internal Standards, Persistance, Move Against, and Punishment scales. They were low on the Problem Analysis, Resourceful Accomplishment, Empirical-Intuitive, Activity-Frequent Change, Independence, Persuasive Leadership, Approval from Others, Social Service, Social Interaction, and Participative Leadership scales. Contrary to expectations, policemen were a little below the norm of the Self-Assertiveness scale.

Juvenile-court judges and social workers differed less from each other than they did from policemen. Both occupations scored high on the Social Service and Move Toward and low on Move Against scales. They differed from each other in that social workers scored higher on the Maintain Standards, Group Identification, Delegative Leadership, Participative Leadership, and Knowledge of Results scales, while the juvenile-court judges scored higher on the Directive Leadership, Rewards, Self-Assertiveness, Accept Routines, Punishment, Persuasive Leadership, and Authority Identification scales. The major unanticipated result was the high score of the social worker on the Maintain Standards and

Knowledge of Results.

Table I shows graphically the average scores of the samples from the three occupations on the JAIM scales, which are relevant to the

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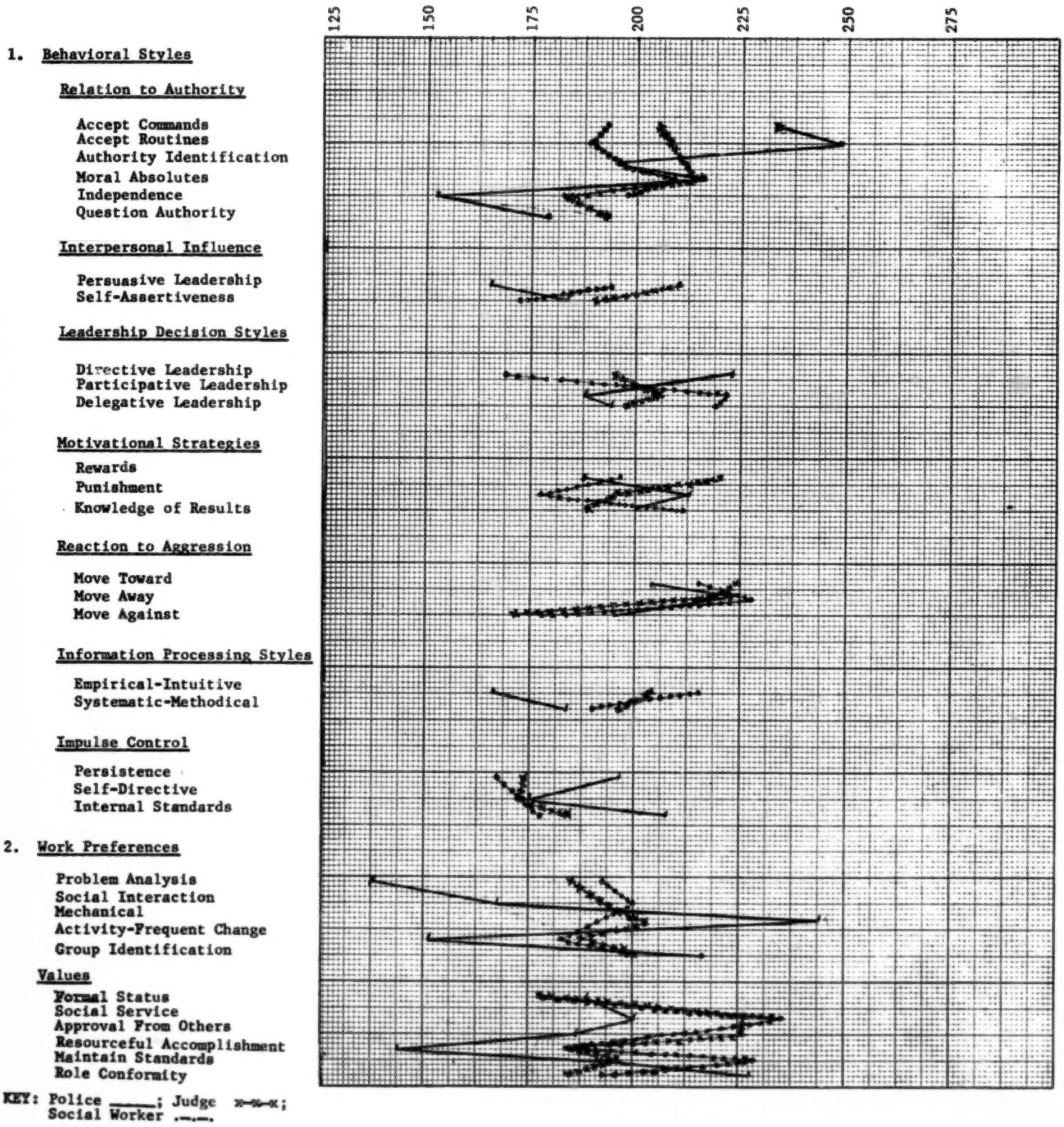
TABLE I

BEHAVIORAL STYLES, WORK PREFERENCES, AND VALUES OF POLICEMEN, SOCIAL WORKERS, AND JUVENILE COURT JUDGES



proposed taxonomy of occupations. The mean scores for each of the samples, as well as scale definitions, are included in the appendixes. The normative population for the JAIM was candidates taking the foreign service officers examination of the U. S. Department of State, the means for each of these scales being set at 200 and a standard deviation at 40. With samples of the size used in this study, the differences of 16 points between means is significant at the .05 level and of 22 points at the .01 level.

The conclusions regarding the three occupations which are suggested by the data are:

Policemen

--They prefer situations in which they know what they are supposed to do and how to do it. They believe that leaders should be decisive and make the decisions themselves, and that punishment is an effective motivational strategy. Compared to judges and social workers, they are more likely to fight back when confronted with aggressive behavior from others. They are more interested in mechanical things than in social interaction or problem analysis, and value themselves by the degree to which they do what they are supposed to do rather than by personal achievement, or social service or approval.

Social Workers

--They like to make decisions for themselves rather than to work in structured situations. They think the leader should share or delegate decision making rather than to make the decisions himself, and they think that knowledge of results is an effective motivational strategy. When confronted with aggressive behavior, they are more likely to try to "pour oil on troubled waters" than to fight back. They like situations permitting social interaction and group identification, and they value themselves through social service and the maintenance of standards.

Juvenile Court Judges

--They relate primarily to the standards of authority and tend to identify with it. They believe that rewards are an effective motivational strategy. Like the social worker, when faced with aggressive behavior, they are more likely to try to "pour oil on troubled waters" than to fight back. They value themselves through social service and the approval from others.

The above profile of the three occupational groups can be considered as only tentative. Another essential step is to compare high and low performers within the occupation. Behavioral-style scales can be considered to reflect behavioral requirements when they both differentiate high from low performers within the occupation, and between high performers within the occupation from high performers in other occupations.

CHAPTER VIII

FURTHER RESEARCH AND DEVELOPMENT

The ability of the JAIM to differentiate among occupational groups, and between individuals rated as superior or weak within an occupational sample, indicates that an individual who has adapted to his environment is able to make a reasonably accurate verbal report about what he likes and dislikes and what he can do and what he cannot do. Self-description inventories as measures of personality characteristics are cheaper to administer and easier to standardize than most other methods such projective, observational, or interview techniques. The relatively moderate cost of self-description inventories allows the use of larger samples; in turn, chance variance is reduced.

Actually, the more expensive techniques currently in use have not proved to be superior for analyzing work performance. Kelly and Fiske (1951) found that neither interviews nor projective techniques could be used to predict performance of clinical psychologists. Almost all the studies successfully predicting occupational criteria have used self-description inventories. The JAIM has has the advantage over other inventories of being anchored both to theory and empirical data, thus permitting interpretation and generalization of the data. Future research using the JAIM should attempt to obtain a wider sampling of occupations, to establish the construct validity of the hypotheses underlying the various scales, and to identify additional variables relevant to occupational performance and satisfaction.

Wider Sampling of Occupations

Approximately 30 occupational groups have already been studied with the JAIM, but they were not picked systematically; nor, in most instances, have superior and weak performers within the occupation been contrasted. Additional occupational groups should be selected with the purpose of including within the occupational sample at least one occupation which can be expected to score at each of the poles of the various JAIM scales. Each occupational sample should consist of a group of workers who have been found, for the most part, to be interchangeable with respect to the performance of the work. This means that many groups with a common occupational title will need to be subdivided until subgroups are obtained which meet the interchangeability criterion. Administering the JAIM to these groups will provide a test of the usefulness of the JAIM scales for distinguishing between superior and weak performers within an occupation, and among superior performers in different occupations.

Establishing Construct Validity of JAIM Scales

Each of the scales of the JAIM is based on an underlying hypothesis, and the items of a scale bear a logical relationship to it. To validate these hypotheses, it is necessary to make predictions and to test them through experiments. The first step is to build upon available research data by correlating the JAIM scales with other measuring instruments which have been used to study performance. The next step is to design and conduct experiments which provide adequate tests of the various scales. For example, the interpersonal-relations scales might be tested by observing behavior in leaderless discussion groups. The relation to authority scales might be tested by an "in-basket" exercise simulating job conditions. The reaction to aggression scales might be tested by observing behavior during the role-playing exercises in which the subject has to deal with agressive behavior.

The behavioral requirements of work should be studied by systematically varying the task along an hypothesized continuum, using subjects with JAIM scores scattered over the entire range of the relevant variable, and then correlating JAIM scores with level of performance on each of the variations of the task. For example, it might be hypothesized that directive leadership is most effective when decisiveness of action is desired; delegative leadership is most effective when the group members have the necessary skills and knowledge and are adequately motivated, and when little coordination is required; and participative leadership is most effective when considerable group interaction is required. Subjects would be selected to include equal distribution among the leadership-decision styles and then tasks would be selected in line with the above hypotheses.

Other Personality Characteristics
Related to Performance

While the evidence is strong that the JAIM is measuring a number of important variables which are related to work performance, there is also evidence of important variables which do not appear to be measured by the JAIM. It is possible that some of these variables cannot be measured by a self-description inventory. Nevertheless, the effort should be made to include them, if possible, within the JAIM. Some of them may be already included under different names or through a combination of scales.

A. Aesthetic Expression and Appreciation

Aesthetic expression and appreciation appears in the models for occupational classification described in Chapter V. The Artistic Scale of the Allport-Vernon Study of Values may be a similar concept. Guilford (1959) reports both an aesthetic expression and appreciation factor in his study of interests. No scale currently included in the JAIM appears to include these elements.

B. Interest in Outdoor Activities

Interest in outdoor activities is one of the activities measured by the Kuder Preference Record (Vocational), and it has also appeared in other studies of interests. Perhaps this is not a distinct factor, but it represents a pattern of behavioral styles and work preferences, including a desire to work with mechanical problems independently with minimal contact with a boss and a peer group.

C. Autonomic Reactivity and Defense Mechanisms

There is clear evidence of individual differences in autonomic reactivity and defense mechanisms against excessive activation. Virtually all the research effort has concerned itself with pathological symptoms. A useful line of inquiry would be to identify and measure the various behavioral styles and relate them to performance in different types of tasks, assuming that each style must have proved successful in some set of circumstances or it would not have been adopted by the individual.

D. Information Reception and Interpretation

Considerable research not reported in this paper has been done on individual differences in cognitive styles and the processes through which a person organizes information. Concepts such as leveling-sharpening, and category width show promise of describing important cognitive differences. This points to the need for the identification and measurement of cognitive variables more refined than those currently used in the JAIM.

E. Risk-Taking Behavior

There is ample evidence that most decisions an individual needs to make involve different degrees and types of risks, and that individuals vary in their risk-taking behavior. An effort should be made to identify the behavioral styles relating to risk-taking which influence performance in various types of tasks.

F. Conflict Resolution

Many jobs involve the need for reconciling conflicts among competing individuals and groups, and successful performance requires that these conflicts be resolved skilfully. Perhaps an element in the Participative Leadership Scale is being sensitive to such conflicts, but there is probably a need for a more direct measure of skill in conflict resolution.

CHAPTER IX

SUMMARY

This paper proposes an experimental taxonomy of occupations based on psychological dimensions of work. It began by evaluating the degree of success achieved by tests of ability, interests, and personality in predicting job satisfaction or performance or in distinguishing among occupations. Then a review was made of experiments designed to determine the relationship between personality variables and different types of task performance ranging from simple tasks to complex job situations. After that, an evaluation was made of various models for classifying occupations and of factor analyses of ability, interests, and personality tests which have been shown to have substantial empirical validation. A major goal throughout the paper was the integration of the research using the author's instrument, the Job Analysis and Interest Measurement (JAIM), with other work relating personality to performance.

It was concluded that the analysis of the job and individual should be focused on those stable differences among individuals, functioning in psychologically equivalent job situations, which are related to differences in job performance and satisfaction. It is not enough to describe differences among individuals and differences in job content. It is essential that consideration be given to the interaction between the personal and situational variables. Thus, jobs should be analyzed in terms of their satisfaction potential and the range of behaviors which may lead to success in them and the personality patterns which are related to these behaviors and satisfaction potential.

The most useful way to subdivide personality variables for occupational-analysis purposes is into behavioral styles, work preferences and values. Behavioral styles are the consistent ways in which individuals organize and direct their mental, physical, and energy resources to accomplish goals; and they include relation to authority, leadership-decision styles, motivational strategies, reaction to aggression, information-processing styles, impulse control, and energy availability. Work preferences are the anticipation of intrinsic satisfaction from the performance of certain types of tasks; and they include social interaction, problem analysis, mechanical interests, activity-frequent change, and group identification. Values are the criteria against which the individual judges the "goodness" or "badness" of the work; and they include formal status, resourceful accomplishment, social service, approval from others, maintaining standards, and role conformity.

Different jobs establish different behavioral requirements and different opportunities for personal satisfaction and feelings of value. Individuals differ in their behavioral styles, work preferences, and criteria for the judgment of success. It is the degree of match between the job and the individual in these dimensions which crucially influences how well he will perform the job.

The taxonomy was then applied experimentally to samples of policemen, social workers, and juvenile-court judges; and, for the most part, the predictions regarding the behavioral styles, work preferences, and values of these occupational groups were confirmed. Finally, proposals were made for further research and development, which included obtaining data from a more representative sample of occupations, designing and conducting experiments to test the construct validity of the hypotheses underlying the various scales of the JAIM, and attempting to identify and measure other variables relevant to work performance or satisfaction not currently being measured by the JAIM.

APPENDIX I

BEHAVIORAL STYLES, WORK PREFERENCES, AND VALUES OF POLICEMEN, SOCIAL WORKERS, AND JUVENILE-COURT JUDGES

	Police (N=27)	Judge (N=24)	Social Worker (N=27)
1. Behavioral Styles			
Relation to Authority			
Accept Commands	237	205	192
Accept Routines	253	207	188
Authority Identification	194	211	196
Moral Absolutes	215	214	209
Independence	152	182	197
Question Authority	178	192	192
Interpersonal Influence			
Persuasive Leadership	165	210	193
Self-Assertiveness	184	192	173
Leadership Decision Styles			
Directive Leadership	223	196	170
Participative Leadership	187	204	221
Delegative Leadership	193	198	219
Motivational Strategies			
Rewards	187	220	196
Punishment	213	196	170
Knowledge of Results	200	195	211
Reaction to Aggression			
Move Toward	203	223	215
Move Away	222	217	228
Move Against	195	171	177
Information-Processing Styles			
Empirical-Intuitive	166	204	215
Systematic-Methodical	184	196	190
Impulse Control			
Persistence	196	174	168
Self-Directive	175	172	173
Internal Standards	207	183	178

2. Work Preferences			
Problem Analysis	138	184	192
Social Interaction	167	192	200
Mechanical	244	203	199
Activity-Frequent Change	151	188	182
Group Identification	199	200	216
3. Values			
Formal Status	188	177	177
Social Service	200	226	238
Approval From Others	186	226	213
Resourceful Accomplishment	144	186	183
Maintain Standards	192	196	230
Role Conformity	227	185	192

APPENDIX II

DEFINITIONS OF THE SCALES OF THE JOB ANALYSIS AND INTEREST MEASUREMENT

1. Accept Commands

This scale measures the degree to which the individual likes to be told by the boss what to do. Individuals scoring high say that they like clear-cut guide lines or instructions so they know exactly what is expected of them; and that obedience and respect for authority are among the most important virtues children should learn.

2. Accept Routines

This scale measures the degree to which the individual likes to have definite procedures available which he can follow. Individuals scoring high say they like to have clear-cut written guide-lines or manuals which tell them clearly what they are supposed to do.

3. Authority Identification

This scale measures the degree to which the individual identifies with his superior and tries to please him. The individual scoring high says that he likes to work closely with and be of help to a superior doing important and interesting work; that his supervisors for the most part have always been helpful and understanding; that he received high grades while in high school; and that he was either obedient toward or tried to please his parents as an adolescent. An individual who identifies with his superior is much more able to interpret accurately what his superior wants and what he would do in particular situations than an individual who either depends upon direct explicit commands or routines or prefers to work on his own. It is a valuable characteristic for a secretary or a staff assistant.

4. Moral Absolutes

This scale measures the degree to which the individual has strong moral beliefs relating to the evaluation of various possible behaviors. Individuals scoring high believe that moral principles come from an outside power higher than man and it is most important to have faith in something. Individuals scoring low believe that moral principles are not absolute and unchanging but depend upon circumstances.

5. Independence

This scale measures the degree to which the individual likes to act on his own. Individuals scoring high say they were independent toward their parents during adolescence; that they have no fixed pattern for getting up in the morning and sometimes get up early and sometimes sleep late, and that it is most important to teach children to be self reliant.

6. Question Authority

This scale measures the degree to which the individual questions both formal and informal authority. Individuals scoring high like best a supervisor who expects and permits them to work on their own, and whose political, religious and social views are different from those of their parents.

7. Persuasive Leadership

This scale measures the degree to which the individual exerts leadership in interpersonal situations. Individuals scoring high report that they have no difficulty giving a speech or reciting before a large group; that they often take the leadership in groups; and that they like best in a job the opportunity to get results through persuasion or negotiation. This style is most effective for situations where it is important that the individual personally influence the behavior of others.

8. Self-Assertiveness

This scale measures the degree to which the individual tends to pursue his own goals when they are in competition with the goals of others. Individuals scoring high say that it is important to avoid being diverted from doing what is right in order to please someone; that they do better under competition or stress;and that they are proficient at athletic games. This styles is most effective in situations where there are conflicts of interest which could interfere with job effectiveness, the job goals are specific, and efficient performance is more important than the reconciliation of differences.

9. Directive Leadership

This scale measures the degree to which the individual believes that an executive gets the best results by making the decisions himself. Individuals scoring high say that an effective supervisor assigns each subordinate a specific job to do and sees that he does it the way it is supposed to be done.

10. Participative Leadership

This scale measures the degree to which the individual believes that executives get best results by having the work group participate in decision making. Individuals who score high say that it is most important that a supervisor develop a strong sense of responsibility in the work group as a whole.

11. Delegative Leadership

This scale measures the degree to which the individual believes that the executive gets best results by delegating decision making authority as much as possible to individual workers. Individuals scoring high say that to the extent practical an effective supervisor permits each subordinate to do the work the way he finds works best for him, and that people are most likely to be influenced by qualified experts.

12. Rewards

This scale measures the degree to which the individual believes that people are motivated best by rewards. Individuals scoring high say that a supervisor gets the best results from his work group when he rewards loyalty and good performance.

13. Punishment

This scale measures the degree to which the individual believes that people are motivated best by punishment. Individuals scoring high say that most people prefer a supervisor who tells them clearly what to do;they believe that if you "spare the rod you spoil the child," and that "it is often necessary to be cruel in order to be kind."

14. Knowledge of Results

This scale measures the degree to which the individual believes that people are motivated best by knowledge of results. Individuals scoring high say that a supervisor gets the best results from his work group when he shows the employees the importance of their work.

15. Move Toward

This scale measures the degree to which the individual tries to "pour oil on troubled waters" when someone acts toward him in a belligerent or aggressive manner. Individuals scoring high say that when a person behaves toward them in a dictatorial or domineering fashion, they try to win him over.

16. Move Away

This scale measures the degree to which the individual withdraws when someone acts toward him in a belligerent or aggressive manner. Individuals scoring high say that they have never been proficient at athletics; that they do not do well under competition or stress; and that they almost never complain to a waiter. Individuals scoring low say they almost always enjoy a fight for a good cause.

17. Move Against

This scale measures the degree to which the individual counter attacks when someone acts toward him in a belligerent or aggressive manner. Individuals scoring high say that when someone crowds ahead of them in line, they do something about it; and if someone acts towards them in a dictatorial or domineering fashion, they seek an occasion to have it out with him.

18. Empirical-Intuitive

This scale measures the degree to which the individual likes to make interpretations of data on an impressionistic and intuitive basis. The individuals who score high find that they can put their point across best orally rather than in writing; work best under a great deal of pressure and tight deadlines; and while in school enjoyed social science and English more than other subjects. This approach is effective when there is a great deal of information to process and interpret and only a limited amount of time is available. It is not an effective approach when accuracy, rather than speed, is desired.

19. Systematical-Methodical

This scale measures the degree to which the individual uses systematic-methodical methods for processing information and reaching decisions. Individuals scoring high believe that when you have a difficult decision to make and feel that you have enough facts, it is best to spend considerable time reviewing all possible interpretations of the facts before making a decision; they prefer the opportunity for careful consideration of all aspects of the problem; they prefer to think it through, alone. This is not a good approach when speed and decisiveness of decision making are important.

20. Persistence

This scale measures the degree to which the individual keeps at something even when he is not particularly interested in it. Individuals scoring high say that when working on a hobby they concentrate for long periods of time and complete each project they start; that they do not tire easily and can work long and steadily; and that other people seldom find something after they have tried and given up. Individuals scoring low say that when they have something to do that doesn't interest them, they either do it after considerable pressure is put upon them or they seldom get around to doing it.

21. Self-Directive

This scale measures the degree to which the individual is a self-starter and directs his own activity toward goal achievement. Individuals scoring high say that they get best results when they establish long-range goals and follow them as much as they can; that they do not tire easily and can work long and steadily; and that they are generally striving to reach some goal they have established for themselves.

22. Internal Standards

This scale measures the degree to which the individual has internal standards which he follows. Individuals scoring high say that they are unusually orderly, and that they get up at about the same time each morning and do not like to stay in bed later than their getting-up time.

23. Problem Analysis

This scale measures the degree to which the individual likes to analyze situations and develop ingenious solutions to problems. Individuals scoring high prefer to be considered ingenious, like to develop new ideas and approaches to problems and situations, and like a job which permits them to be creative and original. This approach is effective when imaginative, innovative problem solving behavior is desired.

24. Social Interaction

This scale measures the degree to which the individual likes work involving interactions with people. Individuals scoring high attend parties or social gatherings once a week or oftener; do not like to work apart from other people; frequently entertain groups at home; and enjoyed participation in social affairs while in high school.

25. Mechanical

This scale measures the degree to which the individual likes to use tools to make something. Individuals scoring high on this scale say they are reasonably skilled craftsmen and enjoy fixing things, like making things by tools, and like hunting and fishing.

26. Activity-Frequent Change

This scale measures the degree to which the individual likes to be actively engaged in work providing a lot of excitment and a great deal of variety. Individuals scoring high on this scale say they frequently enjoy taking part in a fight for good causes; sometimes enjoy dangerous situations; work best under a great deal of pressure and tight deadlines; and prefer a job in which there is a great deal of activity and opportunity to make frequent decisions. Individuals scoring low like to finish one task before starting another.

27. Group Identification

This scale measures the degree to which the individual identifies himself with a highly valued group. Individuals scoring high say they like best to work as a member of a group and do not like to work apart from other people.

28. Formal Status

This scale measures the degree to which the individual values himself by his achievement of the status symbols established by his culture. Individuals scoring high on this scale prefer to be considered ambitious and successful; like to have a job which is recognized to be important or desirable; and think that ideal jobs are ones which show they were a success and had achieved high status and prestige. This criterion can be met by situations which reward incumbents by means of status symbols.

29. Social Service

This scale measures the degree to which the individual values himself by contributing to social improvement. Individuals scoring high like to be considered understanding and charitable; consider the social usefulness of the work to be important; and like work which permits them to be helpful to others. This criterion can be met with jobs which provide possibilities for improving social conditions.

30. Approval from Others

This scale measures the degree to which the individual wants the approval of others for his activities. Individuals scoring high consider it most important to have congenial co-workers; to be well liked; like best in a job the opportunities to accomplish something which will be appreciated by others; and like to please others through their work! This criterion can be met with jobs which permit a great deal of personal interaction and permit the incumbent to be immediately helpful to others.

31. Resourceful Accomplishment

This scale measures the degree to which the individual likes to get results on the basis of his own efforts through use of ingenuity and resourcefulness rather than through supervising other people or through following established procedures and policies. Individuals who score high like to work with a supervisor who insists on high performance standards for himself and his subordinates; like work which permits him to be creative and original; like to be considered ingenious; and believe that it is most important to be intelligent and resourceful as opposed to having faith in something, or being kind and considerate. Situations which are not prescribed external requirements and give scope to ingenious individual solutions to problems are most suitable for individuals scoring high on this scale.

32. Maintain Standards

This scale measures the degree to which the individual values himself by helping to maintain standards established by the society of which he is part. Individuals scoring high say it is most important to have competent co-workers; that when someone makes a grammatical mistake, he should be corrected so that he will know what is right; and that it is most important to have an opportunity to apply professional standards and skills.

33. Role Conformity

This scale measures the degree to which the individual values himself according to how successfully he has conformed to the role requirements of the society. Individuals scoring high say that they prefer to be considered reliable, dependable, trustworthy, industrious.

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